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A Knowledge-Based Approach to Class Scheduling

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TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

A class scheduling application was developed to assist department chairs in producing class schedules each semester. This was accomplished using a knowledge-based system. The system utilized the many constraints involved in the class scheduling process to solve the problem. This application was developed and implemented in an object oriented package called Powerbuilder. Thus, the application is windows based with point and click features. Three trial schedules were produced. These results demonstrate the ability of the application to schedule three types of classes: classes without labs, classes with one lab, and classes with two labs. The end result is that an automated scheduling program is capable of solving the general class scheduling problem at CSB/SJU.

Introduction:

Class scheduling is the process of assigning faculty members to teach the courses offered by a department. The Department Chairperson is usually responsible for scheduling the courses each semester to the satisfaction of the faculty and the needs of the students. To accomplish this task, he or she must consider many factors. For example, the Chairperson must attempt to accommodate the course requests made by the faculty members while following the guidelines of the department and the university. Also, he or she must insure that scheduled classes have the proper facilities. Overall, many constraints must be considered to produce a good schedule.

As department size and number of classes offered increase, scheduling becomes more difficult and time consuming. Currently at CSB/SJU, class schedules are manually produced. No matter how often this process is completed, each semester provides new data and new possibilities that require a non trivial amount of time and effort. Therefore, automating the class scheduling process should significantly reduce the amount of time required to produce departmental schedules.

The computational difficulty arises with the fact that scheduling is an NP-complete problem (p. 82, Garey and Johnson). In an NP-complete problem, the amount of time required to solve the problem grows exponentially with problem size. Thus for scheduling, problem difficulty grows exponentially with the number of items that must be scheduled. Moreover, an NP-complete problem is unlikely to have a general polynomial time algorithmic solution.

For class scheduling, knowledge about the rules and constraints involved and the class scheduling process itself must be obtained. The general and specific scheduling needs of each department are obtained from the interviews with people from each department. For example, class scheduling is usually supervised by the Department Chair,

thus he or she is one of the primary sources for the majority of the required problem solving knowledge. Other general sources of scheduling knowledge include journal articles and books.

Background:

Knowledge-based systems have been used to solve various scheduling problems with some success. Knowledge-based systems arose from research in the area of expert systems. The basis of expert system design originated in the early 1940's with Herbert Simon and Allen Newell. Along with J.C. Shaw, Simon and Newell began development on one of the first rule-based systems (a type of expert system), the General Problem Solver, in 1957. They saw the potential the expert system technology could possess:

> there are now in the world machines that think, that learn and that create. Moreover, their ability to do these things is going to increase rapidly until - in a visible future - the range of problems they can handle will be coextensive with the range to which the human mind had been applied. (p. 16, Zahedi)

It was not until the late 1960's that others witnessed expert systems as the emerging practical side of Artificial Intelligence. In less than three decades, expert and knowledge-based systems entered the computerized decision mainstream and have become the most successful applications of Artificial Intelligence. Today many problems are solved using expert system technology. The areas to which expert systems can be applied include: interpretation, prediction, diagnosis, planning, scheduling, monitoring, debugging, repair, instruction, and control.

A computer system that emulates the decision-making ability of a human expert is considered an expert system. Expert systems have been most successful in the areas that require categorization and pattern recognition. These systems are designed using symbolic manipulation and are qualitative by nature. Expert systems function with knowledge that has been gained by experience. This knowledge is modeled

probabilistically, so there is no deterministic solution, knowledge is acquired and becomes better over time. Since there is no algorithmic solution, expert systems rely on inferences for achieving a reasonable solution; thus expert systems choose between options by weighing the evidence and then determine further processing. Professor Edward Feigenbaum of Stanford University defined expert systems as "an intelligent computer program that uses knowledge and inference procedures to solve problems that are difficult enough to require significant human expertise for their solution" (p. 1, Giarratano and Riley).

Knowledge-based systems are a subset of expert systems. The goal of both expert and knowledge-based systems is to function at the level of the expert. Knowledge-based systems function primarily with knowledge that is deterministic. It uses constraints to choose the appropriate elements in the solution set, and thus are more suitable for solving scheduling problems. Unlike an expert system, a knowledge-based system does have an algorithmic solution so it does not rely on inferences to achieve a solution. Instead, the knowledge necessary to solve the given problem is incorporated into the code. This code works with a given data set and produces a solution. A main advantage of a knowledge-based system is that the human "expert" no longer needs to spend the time solving problems that a knowledge-based system can solve.

Currently, the knowledge within a knowledge-based system can be either expert and/or general knowledge. The knowledge in the system is limited to a specific domain and designed to deal only with the encoded knowledge of the domain. Therefore, unlike human experts, it cannot make analogies to similar knowledge. Moreover, expertise from one domain does not necessarily carry over to another. For example, a chess expert is not necessarily an expert in medicine.

There are four components to a knowledge-based system: domain knowledge, the knowledge-base, the human component, and the system software. Domain knowledge is the area of knowledge that the system uses to make recommendations or solve problems. The knowledge-base contains all the facts or knowledge. The human component is comprised of three parts: the knowledge group, the developer group, and the user group. Individuals that create the knowledge-base are considered members of the knowledge group, and they are often called knowledge engineers. They acquire knowledge from the experts, determine what is expertise within the domain knowledge, and then formalize the structure of the knowledge. This process is often called knowledge acquisition. This task is not easily accomplished by one person, so the knowledge group is frequently broken down into the domain expert and the knowledge engineer. The role of the domain expert is to provide the expert knowledge that is to be emulated by the expert system. The knowledge engineer maps the knowledge into machine usable form, so that it can be used by the knowledge-based system. In order to create this knowledge, the expert must explain how he or she would solve a given problem to the knowledge engineer. If this process does not occur, then the knowledge cannot be encoded; otherwise, system development can proceed. The developer group programs the knowledge-based system. They work closely with both the knowledge group and the user group. The user group is composed of the individuals that will use the system. In developing the expert system one person may fulfill more than one function above. For example, in this thesis the author served as both the knowledge engineer and developer.

Limitations of knowledge-based systems do exist. As mentioned previously, one of these limitations is the fact that the system does not have an understanding of the underlying causes and effects. Thus, it can be easier to program shallow, empirical, and heuristic knowledge than deep knowledge, basic structure, function, and behavior of the objects. Another limitation is the existence of the knowledge acquisition bottleneck. This

term is used since "the knowledge acquisition bottleneck constricts the building of a knowledge-based system like an ordinary bottle neck constricts fluid flow into a bottle" (p. 8, Giarratano and Riley). In other words, it is difficult and time consuming to acquire knowledge from experts. An overly large knowledge-base also reduces the efficiency of a knowledge-based system. It can also increase the possibility of inconsistencies within the knowledge-base. These inconsistencies may occur due to conflicting rules or procedures.

There has been much work done in the scheduling area. For example, papers on the topic include: methods for trains through the Channel Tunnel (Fu and Wright), vehicle scheduling (Atkinson), cricket season scheduling in Australia (Willis and Terrill), scheduling service personnel (Collins and Sisley), fleet scheduling (Christodoulou, Wallace, and Kuchenhoff), flight crew scheduling (Yau), cockpit simulator scheduling (Bell), bus driver scheduling (Paias and Paixao), and nursing scheduling (Randhawa and Sitompul). Many of these projects used constraints to assist in developing the final schedule. In fact, without these constraints a final schedule would be difficult and in some cases impossible to produce.

Of all the papers regarding class scheduling, the approach proposed by Guyette was closest to the proposed application. His program consists of seven modules, which are executed in the following sequence:

* Module 1 CRT display
* Module 2 Collect knowledge from input files
* Module 3 Modify facts
* Module 4 Assign courses to faculty
* Module 5 Modify facts
* Module 6 Exchange classes between faculty members
* Module 7 Display and store results

(p. 154, Guyette)

The program uses actual data files containing the information about classes and faculty members. After the program loads the data, the program converts the information into

computer usable form. After the information is converted, the program assigns classes to the faculty members by preference. Each class is assigned a point value of one for use within the modules. The program aims for a point total of three for each time area of morning, afternoon, and evening and does not allow more than two classes per time slot. Also, the program then tries to assign classes from the faculty members with extra classes to faculty members still needing classes based on preference. A final schedule produced is then converted back into human readable form. One disadvantage of Guyette's program is that it does not schedule classes with labs. Another disadvantage is that it can produce an incomplete schedule as shown in his paper. Guyette's test consisted of assigning forty classes to eleven faculty members. In total, his program assigned thirty-nine of the forty classes.

System Development:

In general, the most difficult part of any system development project is determining what the application is really supposed to accomplish. In order to remedy this problem a thorough knowledge acquisition process was attempted. The plan was to interview the department chairs who are responsible for creating the class schedules each semester in order to obtain a general model of how the scheduling process works for CSB/SJU and more specific knowledge for various departments. The plan was motivated by two reasons. First was to see how difficult it would be to make the program usable by any department. Second was to see how often scheduling information overlapped between departments.

After talking to Dr. Ziegler, Dr. Valley, Dr. Challou, and reviewing journal articles about scheduling, the following model of the current manual process of class scheduling was developed. As questions and problems arose, further information was obtained about scheduling from Dr. Challou. As a start, the following concept was gathered regarding

class scheduling at CSB/SJU. To begin, faculty members request specific courses to teach each semester. Previous schedules determine what courses the faculty members have taught in the past. This gives the Department Chair an idea of what the faculty member wishes to teach and what classes faculty members have taught previously. With these ideas in mind, the Department Chair determines classes for each faculty member.

After completing the interview process, it was decided that it might be possible to make the program usable by all departments, but not to attempt to produce such a system unless time permitted. The remaining information was used to determine the rules and process the program would need to follow to create a class schedule. The following describes some of the underlying assumptions and constraints used in the program. It was found that there were overlapping steps between departments. For example both the Mathematics and Computer Science Departments assign classes with one lab. The program was designed to look at a semester rather than a full year for the required course load. Full time faculty members are assigned a semester course load of three and one half. In addition, the program assumes that a class is worth one credit of total semester course load and each lab is worth one half credit of semester course load. The information obtained from the department chairs and Guyette's paper were also beneficial in determining the scheduling process. The final set of scheduling constraints used by the program include: the classes being offered by the department, when the classes are offered, the faculty member's seniority, number of classes a faculty member can teach in a semester, the faculty member's time preference, and a faculty member cannot be in two places at one time. The implementation of these constraints will be discussed later.

Once the constraints were formulated, and the rules and ideas of scheduling began to take shape, the next step was to decide officially what tools to use for system implementation. There were two key issues that had a major influence in the decision making process. First, the data needed to be easily retrieved and stored for the program

to be effective. Second, the program needed to be user-friendly to people with a wide range of computer skills. With these ideas in mind, the program was created with PowerBuilder (by Powersoft), an object oriented window driven programming utility. In essence, the program is a point and click application that is self-explanatory to the user. The Watcom SQL relational database is used to store the necessary knowledge. Use of a database allows quick and easy updates of the knowledge used by the program and efficient implementation of the system.

System Overview:

This application is designed to schedule three different types of classes: regular classes without labs, a class with a lab, and a class with two labs. The first type of class, a class without labs, is the easiest type of class to schedule. This is because there are not as many possible time conflicts for the faculty member. A second type, a class with one lab, is a bit more difficult since it requires a faculty member to have more time slots available to teach the class and lab. The last type of class, a class with two labs, is the most difficult to schedule. A major reason for the difficulty is the classes are split into two sections and there needs to be even more time slots open for the faculty members. Consequently, three test sets were developed. The first has only classes without labs. The second has both classes without labs and classes with one lab. A third and final test set had all three types of classes. Actual data is discussed further in the experimental results.

Before the program could be tested, the data needs to be entered. This data is information regarding the classes that need to be taught and the faculty members that are available for teaching each semester. The required information for each class is as follows: term, department, course number, section number, course name, class meeting days, start time, end time, campus the class is located on, maximum credits, minimum credits, building the class is taught in, room number, class limit, flags associated with the class, if

there is a lab with the class, days the lab meets, start time of lab, end time of lab, campus the lab is on, maximum credits for the lab, minimum credits for the lab, building the lab is in, and room number the lab is in. Only the term, department, course number, class meeting days, start time, end time, and similar lab information is used by the scheduling algorithm. The remainder of the information is used for the final schedule only. A final schedule can be printed and submitted without having to add the additional information that is needed for the class schedule catalog.

The scheduling algorithm must also attempt to accommodate the requests of the faculty members. This accommodation is carried out by the computer provided that the faculty member information is inputted. This information is as follows: the department they teach, their name, whether they are currently teaching, what their time preference is, whether they teach full time or part time, the first four classes they would like to teach, four of the courses they have taught before, either the priority they have in the scheduling process or three pieces of information (whether they are tenured, years at CSB/SJU, highest degree earned) to determine their seniority, and whether he or she is the department chair. Faculty member information is used to create a schedule with classes and times that they prefer.

The system uses four different user objects to manipulate the previously mentioned data and produce a schedule. As the program starts, a window displaying all class information opens (Figure 1). The user has four options. First, the user can select a term and department and go straight to scheduling (Figure 2). The second option is to select a term and department and edit existing class information or add new class information (Figure 3). A third option is to add a new term and/or a new department so new information can be added regarding classes and faculty members (Figure 4). The fourth option is to view the faculty member's information (Figure 5). If the fourth option is selected the user has four more options. First, if a term was previously selected the user

can select a department and go to scheduling. Second, the user can add a new department (Figure 6). Third, the user can select a department and edit existing information about the faculty members or add new faculty members (Figure 7). Fourth, the user can go back and view the class information. Overall, these windows enable the user to enter or to modify the information necessary for creating a class schedule.

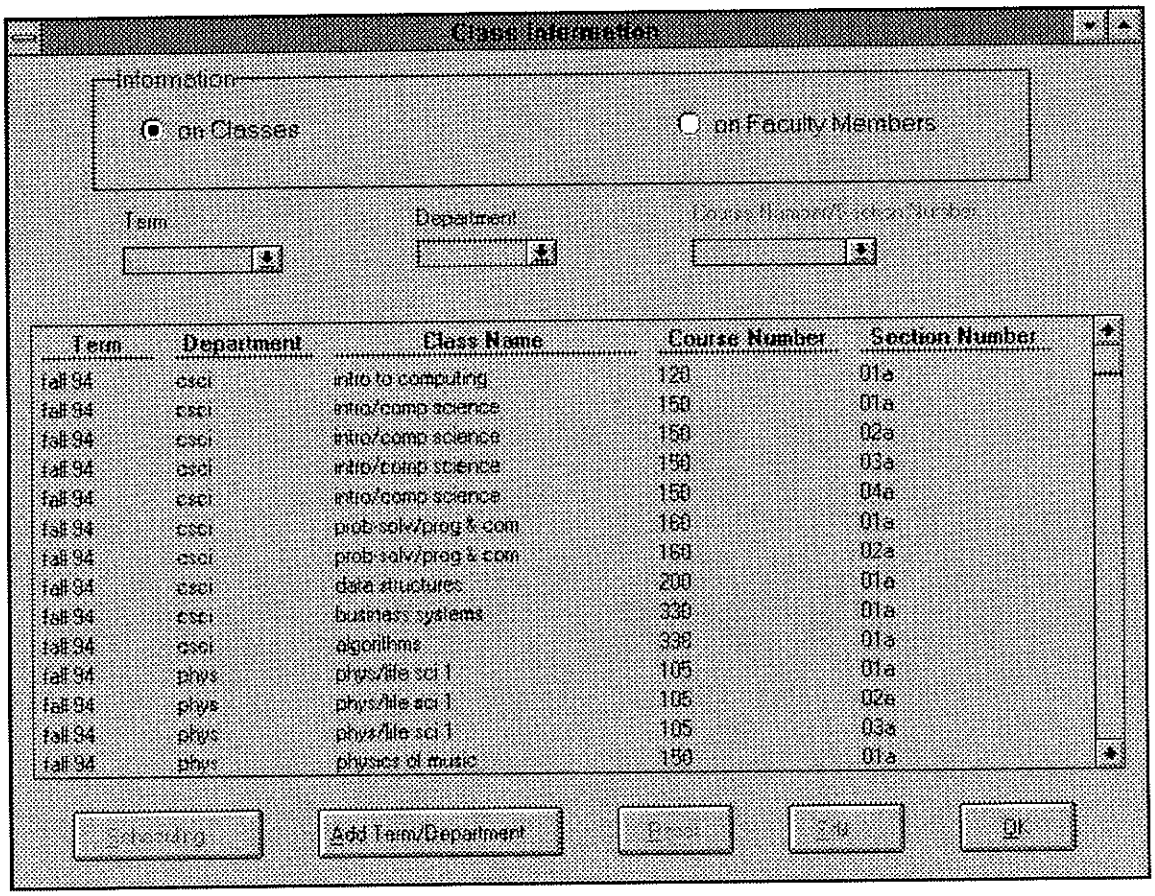

Figure 1: Class Information Window

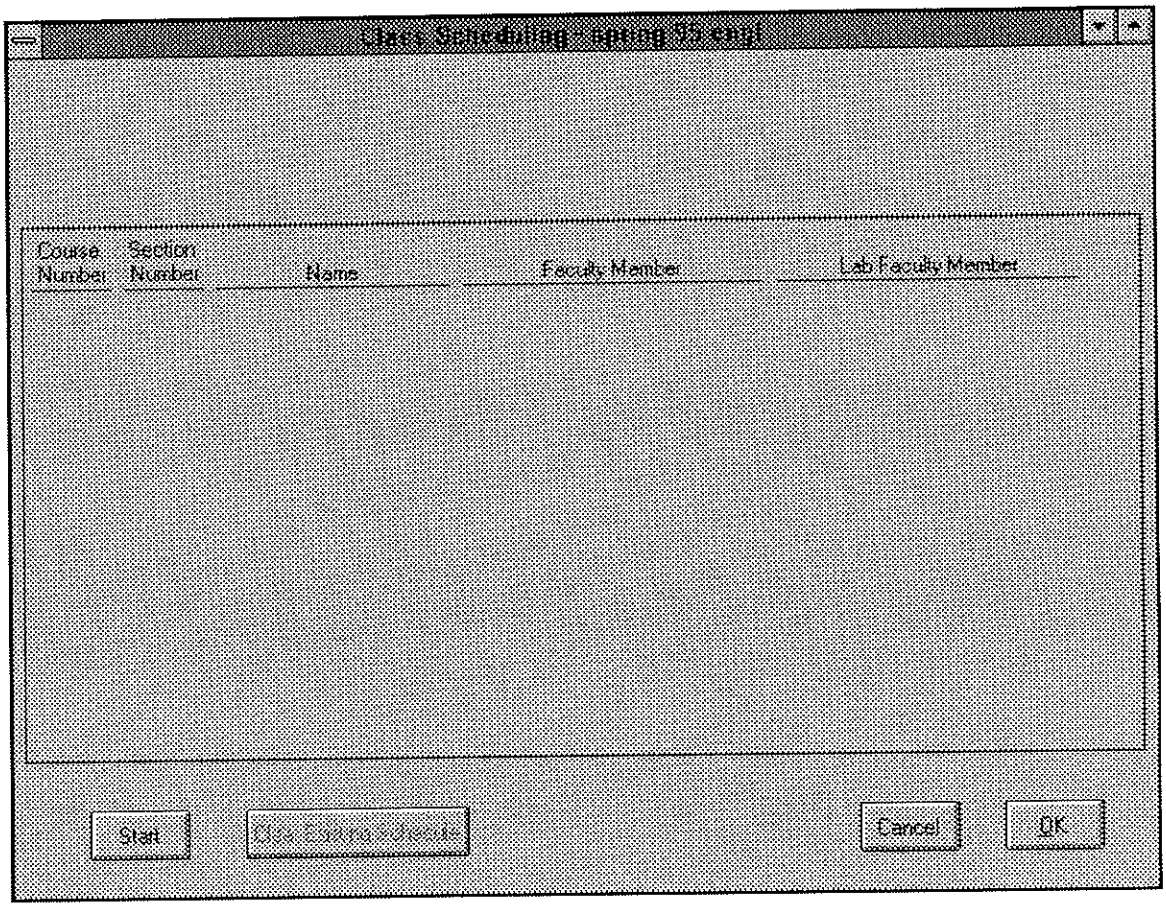

Figure 2: Scheduling Window

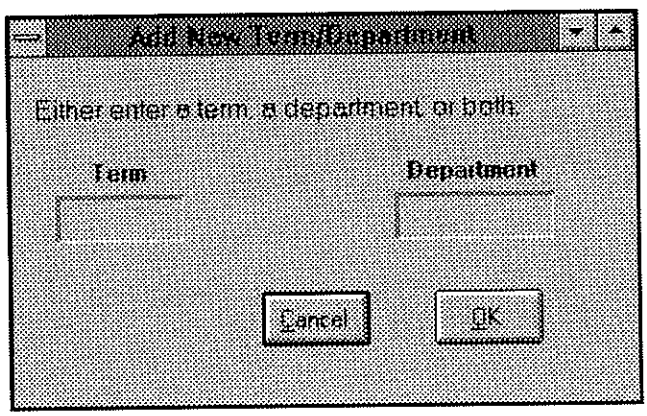

Figure 3: Add Term/Department Window

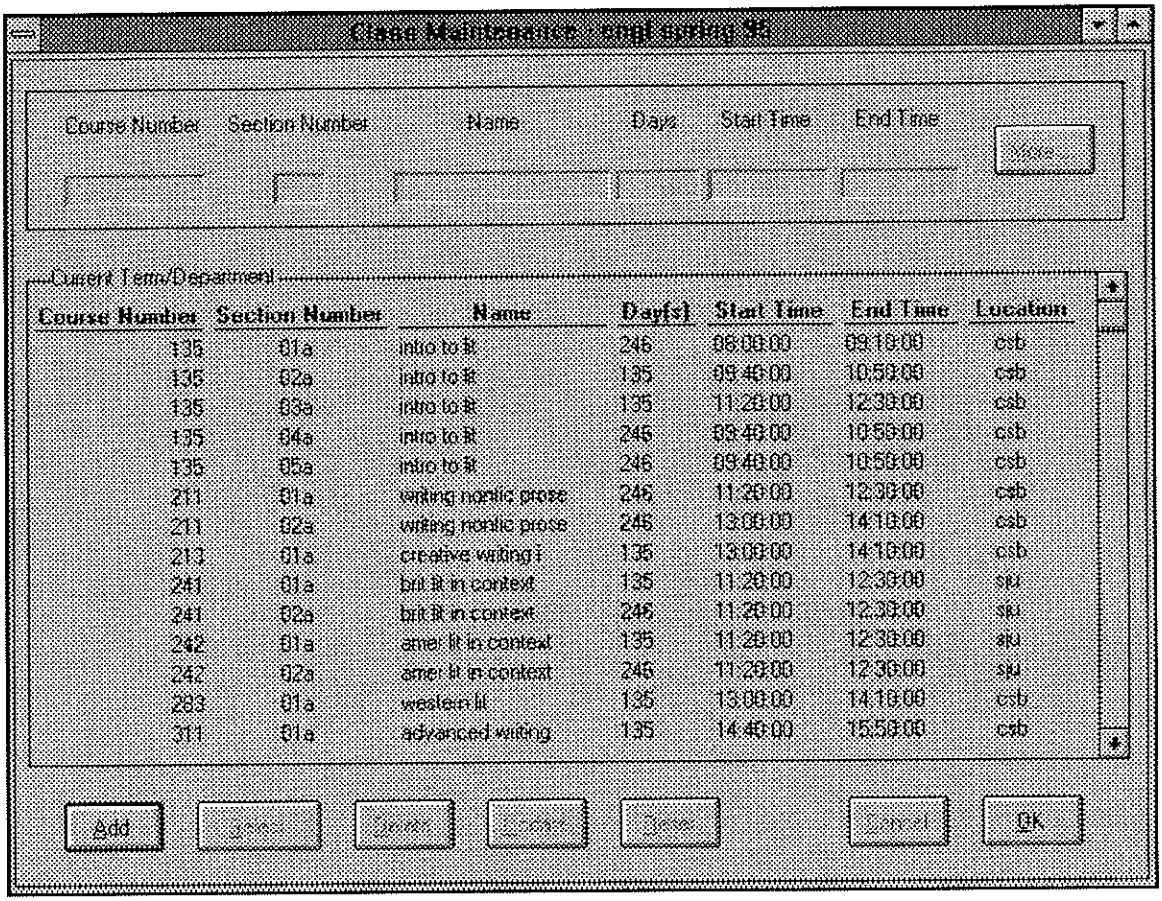

Figure 4: Class Maintenance Window

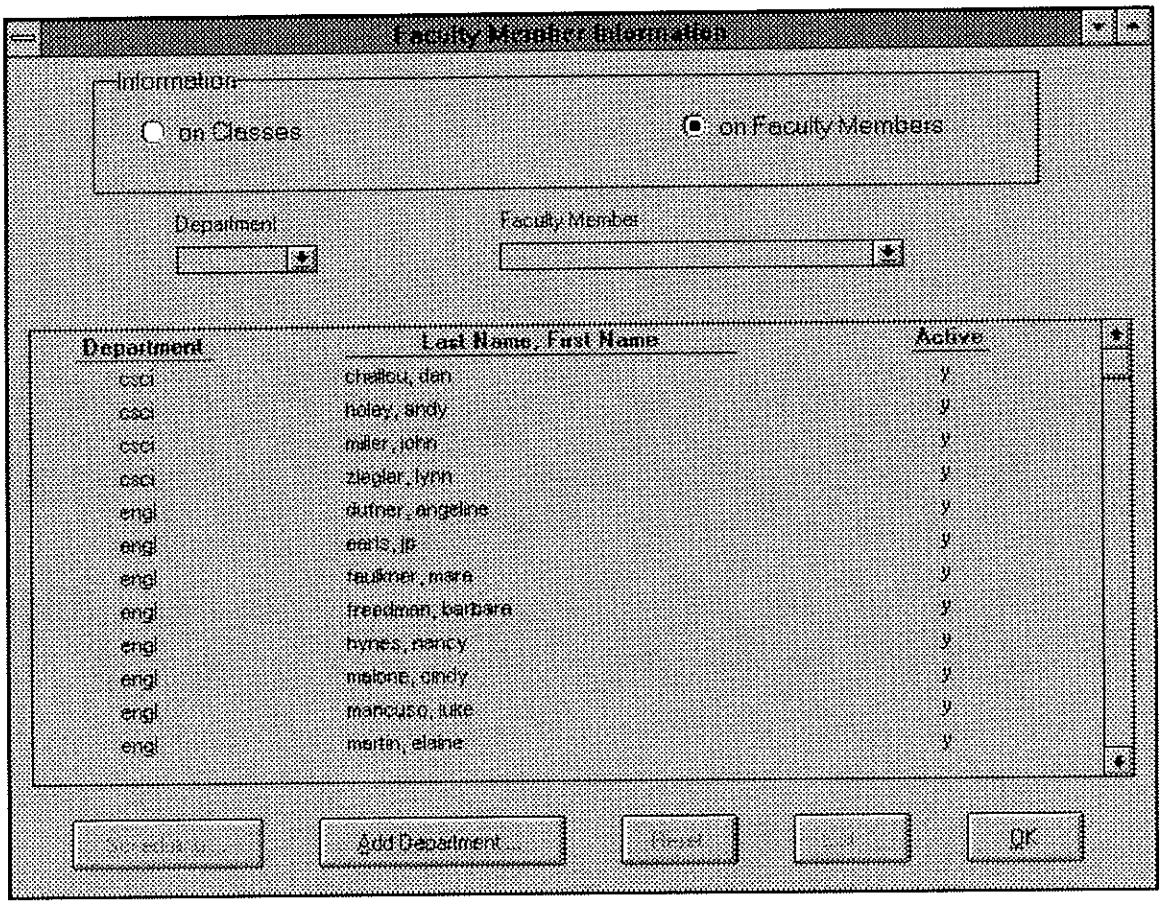

Figure 5: Faculty Member Information Window

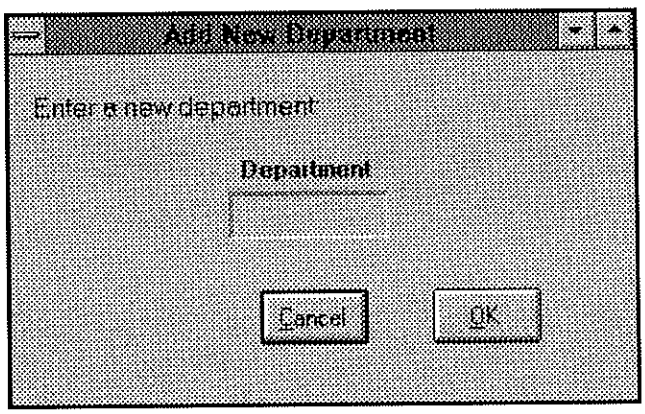

Figure 6: Add Department Window

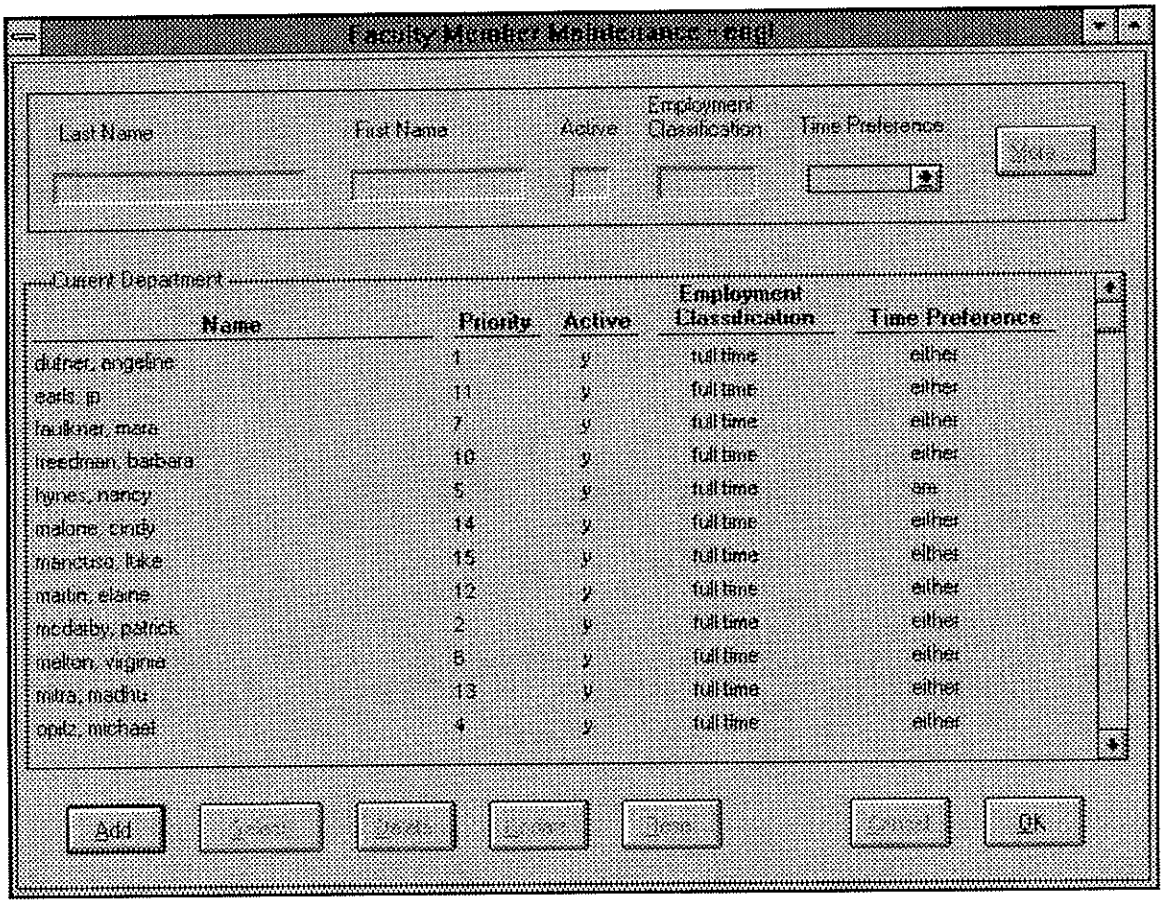

Figure 7: Faculty Member Maintenance Window

The outline of the algorithm is as follows:

```
//Phase 1 -- Assign as many of the classes by preference
TriggerEvent(cb_start, "phase1")

//Phase 2 -- Sort the entries into to many classes, to few classes, okay number of classes
TriggerEvent(cb_start, "phase2")

//Phase 3 -- Finish assigning any remaining classes (if any) according to previous experience
TriggerEvent(cb_start, "phase3")

//Phase 4 -- Assign any remaining classes (if any) to any professor that has that slot open
lv_i_Answer = MessageBox("Seeking Information", "At this time, would you like to have any remaining classes " + &
        "assigned to a faculty member that is available during this classes time?  The other option is to wait until the " + &
        "end to assign the remaining classes.", Question!, YesNo!)
IF (lv_i_Answer = 1) THEN
        TriggerEvent(cb_start, "phase4")
END IF

//Phase 5 -- Move all unassigned classes (if any) to a separate datawindow
TriggerEvent(cb_start, "phase5")

//Phase 6 -- Let professors with the least amount of credits choose from the last acquired courses
//                      of the professors with extra credits (based on preference)
TriggerEvent(cb_start, "phase6")
```

```
//Phase 7 – Let professors with the least amount of credits choose from the last acquired courses
//                    of the professors with extra credits (based on previously taught)
TriggerEvent(cb_start, "phase7")

//Phase 8 – Assign any remaining classes to any professor that has that time slot open  - provided that this was not done
//                    during Phase 4
TriggerEvent(cb_start, "phase8")

//Phase 9 – Move all assigned classes to the done datawindow ... notify if there are any leftover classes
TriggerEvent(cb_start, "phase9")
```

There are a couple of preprocessing steps followed by a nine phase scheduling process. The following paragraphs give an overall description of the entire process. The first step occurs as the window opens. All data regarding classes and faculty members for the selected term and department are loaded and the program checks for an existing final schedule. If it finds a final schedule, it notifies the user and explains what needs to be done if the user desires a new schedule. The remaining steps and phases occur once the start button is clicked. The program then initializes the array containing the faculty members availability, determines the number of classes needing faculty members, and determines the number of faculty members needing classes. Also, it initializes the temporary data window with the professor's name, priority, course credits desired, and course credits obtained. Course credits obtained will have a value of one-half if the faculty member is the department chair, and zero otherwise. After these initial steps are completed, the actual scheduling process begins.

In phase one, the faculty members are given as many of their preferred courses as are available. The faculty member with highest priority gets first choice and the faculty member with lowest priority gets last choice. As each faculty member gets the chance to find a course, the program goes through the preferences until a course is found that fits. This means that if the faculty member with priority three cannot get their first preference, then they will have an opportunity to get their second preference before a faculty member with priority four has any opportunities. Once all four preferences are checked the faculty member is temporarily out of luck for obtaining more classes.

During phase two, faculty members are moved around according to the number of classes they obtained. Any faculty member having less than their required course credits minus a half course credit has their data moved to the group that still needs classes. If the faculty member is within a half credit of his or her required course credit load, their data is moved to the group that does not need classes or does not need to delete classes. All other data remains with the group designed for faculty members that need to give up some of their classes.

In order for phase three to execute, there must be some classes that still need to be assigned to faculty members. If there are classes remaining to be scheduled, then the faculty members that still need classes are assigned a class that they have previously taught. The first faculty member assigned classes is the faculty member with the least number of credits. If there is more than one faculty member with the same number of credits, the faculty member with the highest priority goes first. After the preferences of all the faculty members still needing classes have been processed or all classes have been assigned, the faculty member's data is moved to the appropriate group. If the faculty member has more credits than his or her required course credit load, their data is moved to the group that needs to give up classes. If the faculty member has sufficient course credits, the faculty member's data is moved to the group whose schedule is complete. The remaining faculty member's data stays with the group requiring more classes.

Phase four requires two preprocessing steps. First it requires the user to specify if the remaining classes are to be assigned to any faculty member that needs classes and is available during the time slot. If the user does, then there needs to be classes remaining to be assigned. When both these conditions are met, the program simply goes through each faculty member and looks for an available class to teach. After a class is assigned to a faculty member, the program checks to see if the faculty member's data should be moved to the group with extra credits or the group with just enough credits. Again, the first

faculty member who searches for a class is the faculty member with the least credits. If there is more than one faculty member with the same number of credits, the faculty member with highest priority is first.

In phase five, if there are any classes that have not been assigned yet, the data on these classes is moved. If there are classes remaining, it copies the course number and section number of the class into another location. This class information is used later in phase eight.

Phase six attempts to swap classes between faculty members. The group needing to reduce their course credit load is sorted so the faculty member with the most credits is first. If there is more then one faculty member with the same number of credits, the faculty member with highest priority is first. The group of faculty members, requiring more course credits, is sorted so that the faculty member requiring course credits is first. Sorting then occurs within each similar course credit group, so the highest priority faculty member goes first. Next, courses are assigned to each faculty member needing a class by searching for their course preference in the last class assigned to the faculty member with the most number of extra course credits. If that is not the correct course or if the faculty member is not available to teach it, the faculty member looks for a class from the next faculty member in need of deleting a class. All classes are considered until a class is found. If no matches occur, then the search begins again with the next preference. After a class is reassigned in this manner, the faculty member that gained a class and the faculty member that lost a class have the credits checked against their required course load. They are then moved to the appropriate group. This process continues until either there are no faculty members in the group that still needs course credits or all preferences have been exhausted.

Phase seven does the same processing as phase six with one exception. Instead of looking for classes based on preference it looks for classes based on past experience.

Phase eight is the last attempt to assign any remaining classes to faculty members that still need course credits. If there are any classes, the course number and section number can be found in the unassigned course group created in phase five. As a class is assigned it is removed from the unassigned course group, the faculty member's credits are compared, and the faculty member moves to the appropriate group if necessary.

During phase nine, all the faculty member's classes have their information copied into the final schedule along with the faculty member's name. If there is a lab with the course, the faculty member's name is placed in the lab faculty member location. The user is notified when classes still need to be scheduled. If the user wants the final class schedule saved to the database, they click the okay button. If they do not want the changes saved, they need to click the cancel button.

The program has an enhanced feature set beyond those offered by Guyette's program as follows. The need for input/output files was eliminated by using a database and entering and modifying the input data with the application. Also, the use of a database eliminated the need to convert the input data into workable information for the system and the need to convert the final schedule back into understandable information for the user. Moreover, the scheduling program allows classes to be assigned on previous experience whereas Guyette's program does not. Unlike Guyette's scheduling program, this program does try to schedule classes with separate labs. Other obvious differences occur due to the times and days classes are offered at CSB/SJU. For example, Guyette's scheduling program works with classes offered on days of the week not the six-day cycle. His program also allows two classes per time slot instead of working with the times the class is offered.

Experimental Results:

Experiment one was to create a class schedule for the English department classes offered during Spring term of 1995. Input data for three of the twenty-three classes are shown below:

```
spring 95   engl  135  01a  intro to lit  246  08:00:00  09:10:00  csb  4   4   hab  117  30  hml          n
spring 95   engl  352  01a  shakespeare   246  11:20:00  12:30:00  csb  4   4   hab  120  30  hmu disc w  n
spring 95   engl  385  01a  capstone      135  11:20:00  12:30:00  csb  4   4   bac  130  30  writing      m
```

This class data represented the first section of the Intro to Lit course that is offered on days 246 from 8:00 to 9:10 on the CSB campus in the HAB room 117. There is a limit of thirty students in the class. It carries a hml distinction and has no labs. The only course of Shakespeare is offered on days 246 from 11:20 to 12:30 on the CSB campus in the HAB room 120. Again, there is a limit of thirty students in the class. It carries a hmu distinction, discussion and writing flags, and has no labs. The third class featured is the only section of Capstone offered on days 135 from 11:20 to 12:30 on the CSB campus in the BAC room 130. There is a class limit of thirty students. It carries a writing flag and has no labs. The other input data is information on the faculty members. This featured data includes three of the fifteen active faculty members in the English Department.

```
engl   hynes, nancy   y  am      full time  352  135  383  213  364  383  135  242   y  19  phd  5   n
engl   malone, cindy  y  either  full time  135  385  211  242  135  382  311  383   y  4   phd  14  n
engl   mancuso, luke  y  either  full time  242  135  211  364                        n  1   phd  15  n
```

First is Nancy Hynes who teaches full time and prefers to teach in the morning. She prefers to teach courses 352 Shakespeare, 135 Intro to Lit, 383 Post Colonial Lit, and 213 Creative Writing I. Previously she taught 364, 383, 135, and 242. She has tenure, worked at CSB/SJU for 19 years, and has a Ph.D. These attributes give her a priority of five and she is not the chair of the department. In this experiment, priorities are determined by sorting on the following three fields in this order: the faculty member having tenure, the number of years teaching at CSB/SJU, and finally on the faculty member's highest degree earned. Another faculty member is Cindy Malone. She teaches full time and does not have a time preference for teaching. She would like to teach 135

Intro to Lit, 385 Capstone, 211 Writing Nonfict Prose, and 242 Amer Lit in Context. Previously, Cindy taught courses 135, 382, 311, and 383. She has tenure, worked at CSB/SJU for four years, and has a Ph.D. These attributes give her a priority of fourteen and she is not the department chair. The last featured faculty member is Luke Mancuso who also teaches full time and has no time preference. He would like to teach 242 Amer Lit in Context, 135 Intro to Lit, 211 Writing NonFict Prose, and 364 Mod Poetry/Engl. He has no previous teaching experience with these classes because this is his first year. Along with being his first year, he does not have tenure, but does have a Ph.D. Thus, his priority is fifteen and he is not the department chair. For this experiment the faculty member's course preferences and previously taught courses were determined by random drawing. A complete listing of both the class information and faculty member information for the English department for Spring term 1995, can be found in Appendix A.

After the application processed the input data, a final class schedule was created. All twenty-three classes were assigned faculty members to teach the courses. No comparison could be made to the actual class schedule made by the department chair because, as mentioned earlier, course preferences and course experience was selected by a random drawing. A sample of the final schedule for the three faculty members discussed above is as follows:

```
spring 95  engl  135  01a  intro to lit  246  08:00:00  09:10:00  csb  4  4  hab     117  30  hml     malone,cindy
spring 95  engl  135  02a  intro to lit  135  09:40:00  10:50:00  csb  4  4  hab     120  30  hml     mancuso luke
spring 95  engl  135  03a  intro to lit  135  11:20:00  12:30:00  csb  4  4  ardolf  107  30  hml     hynes,nancy
spring 95  engl  352  01a  shakespeare   246  11:20:00  12:30:00  csb  4  4  hab     120  30  hmu dc w hynes,nancy
```

The entire schedule may be found in Appendix A. Nancy Hynes obtained her first preference most likely because she has a higher priority and her second choice because of her priority and the class' lack of popularity among faculty members. Cindy Malone was also able to obtain her first preference not directly because of her priority but because she desired a course with low popularity among the faculty as well. Luke Mancuso was

unable to obtain his first choice but was given his second choice due to his low priority. In any case, everyone was assigned some of the courses they desired.

The goal of experiment two was to test the application with some classes that have one lab associated with it. As mentioned previously, the Mathematics Department will be the source for the test. In addition, more classes must be assigned to fewer faculty when compared with the English Department. Portions of the input data regarding the thirty classes offered by the Mathematics Department for Spring term 1995 are as follows:

```
spring 95   math  114  01a  math exploration   246  08:00:00  09:10:00  sju  4   4   science  233  30  mt  n
spring 95   math  119  01a  calculus i         246  08:00:00  09:10:00  csb  4   4   ardolf   142  30  mt  y
            35    14:40:00   15:50:00          csb  0         0         ardolf  127
spring 95   math  124  01a  prob stat infer    135  08:00:00  09:10:00  csb  4   4   ardolf   105  30  mt  n
spring 95   math  239  01a  linear algebra     246  13:00:00  14:10:00  csb  4   4   hab      101  30      n
spring 95   math  346  01a  math stat ii       135  11:20:00  12:30:00  sju  4   4   science  231  30      n
```

Of the above classes, only the 119 course has a lab associated with it. There are more classes with labs in the complete input data for all Spring term 1995 classes located in Appendix A. The results for only three faculty members are considered as follows:

```
math   gass, michael       y either   full time  124  114  332  343  120  123  346  241  y  9   phd  6   y
math   dumonceaux, robert  y either   full time  346  124  120  322  124  121  120  119  y  30  phd  2   n
math   brodie, marc        y either   full time  239  114  119  124                        n  1   phd  11  n
```

Michael Gass has the added responsibility of being the department chair. Robert Dumonceaux has a very high priority because he has taught at CSB/SJU for many years. On the other hand, Marc Brodie has a low priority because this is his first year teaching at CSB/SJU. The information regarding the faculty members preferred courses and previously taught classes were again assigned by a random drawing. All data concerning the thirty classes and eleven faculty members will be used to produce a final class schedule of the classes taught by the Mathematics Department for Spring term 1995.

By using the input data, a final class schedule was produced by the application. All thirty classes and seven labs were assigned faculty members. Many faculty members obtained the classes they wanted to teach. A complete final schedule is located in Appendix A but the schedule for the three faculty members considered is as follows:

```
     spring 95   math   114   01a   math exploration   246   08:00:00   09:10:00   sju   4  4   science   233   30   mt   gass,
michael
     spring 95   math   119   01a   calculus i         246   08:00:00   09:10:00   csb   4  4   ardolf    142   30   mt   brodie,
marc              35     14:40:00   15:50:00           csb   0          0          ardolf   127            brodie, marc
     spring 95   math   124   02a   prob stat infer    135   09:40:00   10:50:00   csb   4  4   ardolf    107   30   mt   gass,
michael
     spring 95   math   124   04a   prob stat infer    246   11:20:00   12:30:00   sju   4  4   science   213   30   mt   dumonceaux,
robert
     spring 95   math   124   08a   prob stat infer    135   14:40:00   15:50:00   sju   4  4   science   233   30   mt   dumonceaux,
robert
     spring 95   math   239   01a   linear algebra     246   13:00:00   14:10:00   csb   4  4   hab       101   30        brodie,
marc
     spring 95   math   346   01a   math stat ii       135   11:20:00   12:30:00   sju   4  4   science   231   30        dumonceaux,

robert
```

The classes obtained by the three faculty members were in their list of preferred courses. In fact, Robert Dumonceaux obtained his first preference and two sections of his second preference. Besides being the department chair, Michael Gass will be teaching his first preference, Probs and Stats, and his second preference, Math Explorations. The new faculty member, Marc Brodie, will be teaching his first preference, linear algebra, and his third preference, Calculus I. The class scheduling application assigned all courses taught by the Mathematics Department for Spring term 1995. Again, a comparison could not be made to the actual class schedule because the faculty member's course preferences and course experiences were selected randomly.

The final experiment was to determine how the application scheduled classes having two labs. Experiment three attempted to produce a schedule for the Computer Science Department. Although there are fewer classes to schedule for this department, this case is difficult because all three types of classes, including the classes with two labs must be scheduled. As usual the standard input data for the classes offered and faculty members were entered. The following is a sample of the seven classes offered:

```
fall 94   csci   150   01a   intro/comp science   246   08:00:00   09:10:00   csb   4   4 ardolf    104   15   qr, ns
          y      1     08:00:00                   10:50:00         sju         0     0   science     217
fall 94   csci   150   02a   intro/comp science   246   08:00:00   09:10:00   csb   4   4 ardolf    104   15   qr, ns
          y      3     08:00:00                   10:50:00         sju         0     0   science     217
fall 94   csci   200   01a   data structures      135   09:40:00   10:50:00   sju   4   4 science   215   15   writ
          y      4     13:00:00                   15:50:00         sju         0     0   science     217
fall 94   csci   330   01a   business systems     135   13:00:00   14:10:00   sju   4   4 science   233   30

          n
```

Although the 150 classes are listed in two sections, it is one class with two labs. The 200 class is a class with one lab. Finally, the 330 class is a class without a lab. The following is a sample of two of the four faculty members in the Computer Science Department:

```
csci   holey, andy   y  either full time   338  210  150  160  150  160  200  317  2 n 4    phd 2    n
csci   challou, dan  y  either full time   160  150  330  120  150  330  317       3              3    n
```

One feature being used is the ability to assign a priority to a faculty member and not determine the priority by using the following three pieces of information: tenure, years at CSB/SJU, and highest degree earned. One may also note that both types of data may be entered regarding methods of determining priority. The priority values used during the scheduling process are determined from the existing data and stored in the database. The faculty members did not request the classes listed, but they were assigned for the purpose of testing. Complete data regarding classes and faculty members is located in Appendix A.

A class schedule was produced using the existing data for the Computer Science Department for Fall term 1994. All seven classes and eight labs were assigned faculty members. Four of these classes are listed below:

```
fall 94  csci  150  01a  intro/comp science   246  08:00:00   09:10:00  csb  4  4  ardolf   104  15  qr, ns
         challou, dan    1                    08:00:00        10:50:00  sju  0  0  science  217  challou, dan
fall 94  csci  150  02a  intro/comp science   246  08:00:00   09:10:00  csb  4  4  ardolf   104  15  qr, ns
         challou, dan    3                    08:00:00        10:50:00  sju  0  0  science  217  challou, dan
fall 94  csci  150  03a  intro/comp science   135  14:40:00   15:50:00  sju  4  4  science  233  15  qr
         holey, andy     6                    08:00:00        10:50:00  sju  0  0  science  217  holey, andy
fall 94  csci  150  04a  intro/comp science   135  14:40:00   15:50:00  sju  4  4  science  233  15  qr, ns
         holey, andy     4                    08:00:00        10:50:00  sju  0  0  science  217  holey, andy
fall 94  csci  330  01a  business systems     135  13:00:00   14:10:00  sju  4  4  science  233  30
         challou, dan

fall 94  csci  338  01a  algorithms           246  13:00:00   14:10:00  sju  4  4  science  215  30  writ

         holey, andy
```

Dan Challou obtained his second course preference and third course preference; Andy Holey obtained his first course preference and third course preference. The complete final schedule list is located in Appendix A. As with the first two experiments, the class scheduling application produced a reasonable class schedule for the Computer Science Department courses for Fall term 1994. The course preferences were assigned by random drawing and course experiences were selected by the experimenter's experience with the Computer Science Department so no comparisons were made to the actual schedule. However, it can be noted that the final schedule seems reasonable to similar schedules for the Computer Science Department.

Discussion of Results:

The most important result of all three experiments is simply that a full class schedule was produced for each data set. In other words, all courses were assigned a faculty member to teach the class. The application is also able to handle scheduling three types of classes: regular class without a lab, a class with one lab, and a class with two labs. These were shown by experiment one, experiment two, and experiment three respectively. One feature is that the application tries to accommodate for the faculty member's teaching time preference. The options for time preference are morning, afternoon, or either. Input data for the courses and faculty members along with the final schedule are located in Appendix A. Potential problems can arise from trying to schedule classes with two labs. In fact, on a trial run of data for the Computer Science Department Spring term 1995, one of the 150 courses was not assigned to a faculty member. The cause of the problem stems from the fact that an assumption was coded into the application. This assumption was that the faculty member who taught the class would also teach the labs. This scenario is not the case in the Computer Science Department. However, it is difficult to have the computer keep track of labs that are not attached to a class or a section number. Some difficulties arose when the information given by different people conflicted. When this occurs the developer tried to make reasonable assumptions. If this method fails, one goes back to the department chairs for clarification. These discrepancies occurred due to a lack of understanding on the developer's part. Some discrepancies were caused because the experts do not necessarily have the ability to completely explain how the process works. Another main problem was obtaining incorrect information. For example, at this point, the developer is not positive what the correct answer is to the relative worth of a lab. For the most part it was a reasonable assumption to have the faculty member teach both the class and the labs that are a part of the class. In any case, the results of the three experiments produced complete and viable class schedules. Because Guyette's paper did

not provide all of the class data and faculty member data, his data could not be run to test the application or to compare the final schedule produced by both applications.

Summary and Conclusion:

By the end of the project, a reasonable understanding of how class scheduling should work was obtained. This required understanding both the general concept of scheduling and how a knowledge-based system could be used for scheduling. With this knowledge, a working scheduling program using PowerBuilder (by Powersoft) was created.

The scheduling program was developed and tested using data for three different departments: English, Mathematics, and Computer Science. These departments were chosen to demonstrate the applications ability to handle three different types of classes: regular class without a lab, a class with one lab, and a class with two labs. The English Department offers only classes without labs, the Mathematics Department offers both classes without labs and classes with one lab, and the Computer Science Department offers all three types of classes. The application produced a complete and viable class schedule for each department. This result indicated a possible improvement over the application described in Guyette's system since his system scheduled only thirty-nine out of the forty classes. In addition, a clearer understanding of the software package used in the development and implementation of the application was ascertained. PowerBuilder (by Powersoft) not only enhanced the developers understanding of a window based applications but also taught the developer more about the practical use of databases.

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APPENDIX A

Class information for English Department Spring term 1995:

term	dept	course/sec		title	days	start	end	loc	credit		building/rm		limit	flags	lab				
spring 95	engl	135	01a	intro to lit	246	08:00:00	09:10:00	csb	4	4	hab	117	30	hml	n	00:00:00	00:00:00	0	0
spring 95	engl	135	02a	intro to lit	135	09:40:00	10:50:00	csb	4	4	hab	120	30	hml	n	00:00:00	00:00:00	0	0
spring 95	engl	135	03a	intro to lit	135	11:20:00	12:30:00	csb	4	4	ardolf	107	30	hml	n	00:00:00	00:00:00	0	0
spring 95	engl	135	04a	intro to lit	246	09:40:00	10:50:00	csb	4	4	hab	128a	30	hml	n	00:00:00	00:00:00	0	0
spring 95	engl	135	05a	intro to lit	246	09:40:00	10:50:00	csb	4	4	hab	015	30	hml	n	00:00:00	00:00:00	0	0
spring 95	engl	211	01a	writing nonfic prose	246	11:20:00	12:30:00	csb	4	4	hab	118	30	glob writ	n	00:00:00	00:00:00	0	0
spring 95	engl	211	02a	writing nonfic prose	246	13:00:00	14:10:00	csb	4	4	hab	118	30	glob writ	n	00:00:00	00:00:00	0	0
spring 95	engl	213	01a	creative writing i	135	13:00:00	14:10:00	csb	4	4	bac	108	30	writ	n	00:00:00	00:00:00	0	0
spring 95	engl	241	01a	brit lit in context	135	11:20:00	12:30:00	sju	4	4	quad	457	30		n	00:00:00	00:00:00	0	0
spring 95	engl	241	02a	brit lit in context	246	11:20:00	12:30:00	sju	4	4	quad	353	30	writ	n	00:00:00	00:00:00	0	0
spring 95	engl	242	01a	amer lit in context	135	11:20:00	12:30:00	sju	4	4	quad	459	30	gender	n	00:00:00	00:00:00	0	0
spring 95	engl	242	02a	amer lit in context	246	11:20:00	12:30:00	sju	4	4	quad	361	30		n	00:00:00	00:00:00	0	0
spring 95	engl	283	01a	western lit	135	13:00:00	14:10:00	csb	4	4	hab	128a	30	hml	n	00:00:00	00:00:00	0	0
spring 95	engl	311	01a	advanced writing	135	14:40:00	15:50:00	csb	4	4	clenl	131	30	writing	n	00:00:00	00:00:00	0	0
spring 95	engl	311	02a	advanced writing	246	14:40:00	15:50:00	csb	4	4	hab	101	30	writing	n	00:00:00	00:00:00	0	0
spring 95	engl	347	01a	amer lit after 1865	135	14:40:00	15:50:00	sju	4	4	quad	353	30		n	00:00:00	00:00:00	0	0
spring 95	engl	351	01a	chaucer	246	09:40:00	10:50:00	sju	4	4	quad	341	30	hmu gen w	n	00:00:00	00:00:00	0	0
spring 95	engl	352	01a	shakespeare	246	11:20:00	12:30:00	csb	4	4	hab	120	30	hmu disc w	n	00:00:00	00:00:00	0	0
spring 95	engl	364	01a	mod poetry/engl	135	13:00:00	14:10:00	sju	4	4	quad	447	30		n	00:00:00	00:00:00	0	0
spring 95	engl	369	01a	crit: theory/prac	135	09:40:00	10:50:00	sju	4	4	quad	457	30		n	00:00:00	00:00:00	0	0
spring 95	engl	382	01a	minority literature	135	09:40:00	10:50:00	csb	4	4	hab	121	30		n	00:00:00	00:00:00	0	0
spring 95	engl	383	01a	post-colonial lit	246	13:00:00	14:10:00	csb	4	4	hab	121	30	global	n	00:00:00	00:00:00	0	0
spring 95	engl	385	01a	capstone	135	11:20:00	12:30:00	csb	4	4	bac	130	30	writing	n	00:00:00	00:00:00	0	0

Faculty member information for English Department Spring term 1995:

dept	faculty member	active	time	work load	course preferences				previous courses				tenure	yrs	degree	priority	chair
engl	dufner, angeline	y	either	full time	385	242	352	383	135	311	211	383	y	33	ma	1	n
engl	earls, jp	y	either	full time	351	311	211	242	347	135	385	213	y	10	phd	11	y
engl	faulkner, mara	y	either	full time	382	242	135	347	135	241	211	369	y	18	phd	7	n
engl	freedman, barbara	y	either	full time	369	311	211	383	211	351	311	382	y	12	phd	10	n
engl	hynes, nancy	y	am	full time	352	135	383	213	364	383	135	242	y	19	phd	5	n
engl	malone, cindy	y	either	full time	135	385	211	242	135	382	311	383	y	4	phd	14	n
engl	mancuso, luke	y	either	full time	242	135	211	364					n	1	phd	15	n
engl	martin, elaine	y	either	full time	383	347	242	213	351	135	211	311	y	7	phd	12	n
engl	mcdarby, patrick	y	either	full time	213	211	352	242	135	351	242	347	y	28	ma	2	n
engl	melton, virginia	y	either	full time	383	211	135	242	213	311	135	264	y	19	ma	6	n
engl	mitra, madhu	y	either	full time	383	242	385	135	347	369	242	364	y	5	phd	13	n
engl	opitz, michael	y	either	full time	311	241	135	347	311	211	241	382	y	21	phd	4	n
engl	peters, patricia	y	either	full time	352	241	213	369	242	135	385	347	y	14	phd	9	n
engl	thimmesh, hilary	y	either	full time	213	242	383	135	385	283	311	241	y	27	phd	3	n
engl	thornbury, charles	y	either	full time	364	211	135	352	311	242	351	364	y	17	phd	8	n

Final class schedule for the English Department Spring term 1995:

term	dept	course/sec		title	days	start	end	loc	credits		building		limit	flags	faculty member
spring 95	engl	135	01a	intro to lit	246	08:00:00	09:10:00	csb	4	4	hab	117	30	hml	malone, cindy
spring 95	engl	135	02a	intro to lit	135	09:40:00	10:50:00	csb	4	4	hab	120	30	hml	mancuso, luke
spring 95	engl	135	03a	intro to lit	135	11:20:00	12:30:00	csb	4	4	ardolf	107	30	hml	hynes, nancy
spring 95	engl	135	04a	intro to lit	246	09:40:00	10:50:00	csb	4	4	hab	128a	30	hml	thimmesh, hilary
spring 95	engl	135	05a	intro to lit	246	09:40:00	10:50:00	csb	4	4	hab	015	30	hml	melton, virginia
spring 95	engl	211	01a	writing nonfic prose	246	11:20:00	12:30:00	csb	4	4	hab	118	30	glob writ	mcdarby, patrick
spring 95	engl	211	02a	writing nonfic prose	246	13:00:00	14:10:00	csb	4	4	hab	118	30	glob writ	thornbury, charles
spring 95	engl	213	01a	creative writing i	135	13:00:00	14:10:00	csb	4	4	bac	108	30	writ	mcdarby, patrick
spring 95	engl	241	01a	brit lit in context	135	11:20:00	12:30:00	sju	4	4	quad	457	30		peters, patricia
spring 95	engl	241	02a	brit lit in context	246	11:20:00	12:30:00	sju	4	4	quad	353	30	writ	opitz, michael
spring 95	engl	242	01a	amer lit in context	135	11:20:00	12:30:00	sju	4	4	quad	459	30	gender	thimmesh, hilary
spring 95	engl	242	02a	amer lit in context	246	11:20:00	12:30:00	sju	4	4	quad	361	30		mitra, madhu
spring 95	engl	283	01a	western lit	135	13:00:00	14:10:00	csb	4	4	hab	128a	30	hml	peters, patricia
spring 95	engl	311	01a	advanced writing	135	14:40:00	15:50:00	csb	4	4	cleml	131	30	writing	opitz, michael
spring 95	engl	311	02a	advanced writing	246	14:40:00	15:50:00	csb	4	4	hab	101	30	writing	freedman, barbara
spring 95	engl	347	01a	amer lit after 1865	135	14:40:00	15:50:00	sju	4	4	quad	353	30		martin, elaine
spring 95	engl	351	01a	chaucer	246	09:40:00	10:50:00	sju	4	4	quad	341	30	hmu gen w	earls, jp
spring 95	engl	352	01a	shakespeare	246	11:20:00	12:30:00	csb	4	4	hab	120	30	hmu disc w	hynes, nancy
spring 95	engl	364	01a	mod poetry/engl	135	13:00:00	14:10:00	sju	4	4	quad	447	30		thornbury, charles
spring 95	engl	369	01a	crit: theory/prac	135	09:40:00	10:50:00	sju	4	4	quad	457	30		freedman, barbara
spring 95	engl	382	01a	minority literature	135	09:40:00	10:50:00	csb	4	4	hab	121	30		faulkner, mara
spring 95	engl	383	01a	post-colonial lit	246	13:00:00	14:10:00	csb	4	4	hab	121	30	global	melton, virginia
spring 95	engl	385	01a	capstone	135	11:20:00	12:30:00	csb	4	4	bac	130	30	writing	dufner, angeline

Class information for Mathematics Department Spring term 1995:

term	dept	course/sec		title	days	start	end	loc	credits		building		limit	flags, lab, lab information								
spring 95	math	114	01a	math exploration	246	08:00:00	09:10:00	sju	4	4	science	233	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	114	02a	math exploration	246	09:40:00	10:50:00	sju	4	4	science	231	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	119	01a	calculus i	246	08:00:00	09:10:00	csb	4	4	ardolf	142	30	mt	y	35	14:40:00	15:50:00	csb	0	0	ardolf 127
spring 95	math	119	02a	calculus i	135	09:40:00	10:50:00	sju	4	4	science	215	30	mt	y	24	14:40:00	15:50:00	sju	0	0	science 213
spring 95	math	120	01a	calculus ii	246	08:00:00	09:10:00	sju	4	4	science	215	30	mt	y	35	08:00:00	09:10:00	sju	0	0	science 215
spring 95	math	120	02a	calculus ii	135	09:40:00	10:50:00	csb	4	4	hab	101	30	mt	y	24	14:40:00	15:50:00	csb	0	0	hab 015
spring 95	math	120	03a	calculus ii	135	11:20:00	12:30:00	csb	4	4	hab	101	30	mt	y	24	08:00:00	09:10:00	csb	0	0	hab 015
spring 95	math	120	04a	calculus ii	135	14:40:00	15:50:00	csb	4	4	hab	101	30	mt	y	24	14:40:00	15:50:00	csb	0	0	hab 101
spring 95	math	121	01a	fund of math	246	08:00:00	09:10:00	csb	4	4	hab	102b	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	121	02a	fund of math	246	09:40:00	10:50:00	csb	4	4	hab	012b	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	122	01a	finite math	135	08:00:00	09:10:00	sju	4	4	science	231	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	122	02a	finite math	135	11:20:00	12:30:00	sju	4	4	science	233	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	123	01a	essential calc	135	11:20:00	12:30:00	csb	4	4	ardolf	105	30	mt	y	24	08:00:00	09:10:00	csb	0	0	ardolf 105
spring 95	math	124	01a	prob stat infer	135	08:00:00	09:10:00	csb	4	4	ardolf	105	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	02a	prob stat infer	135	09:40:00	10:50:00	csb	4	4	ardolf	107	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	03a	prob stat infer	246	09:40:00	10:50:00	sju	4	4	science	215	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	04a	prob stat infer	246	11:20:00	12:30:00	sju	4	4	science	213	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	05a	prob stat infer	135	11:20:00	12:30:00	sju	4	4	science	213	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	06a	prob stat infer	246	11:20:00	12:30:00	sju	4	4	science	231	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	07a	prob stat infer	246	13:00:00	14:10:00	sju	4	4	science	231	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	124	08a	prob stat infer	135	14:40:00	15:50:00	sju	4	4	science	233	30	mt	n		00:00:00	00:00:00		0	0	
spring 95	math	239	01a	linear algebra	246	13:00:00	14:10:00	csb	4	4	hab	101	30		n		00:00:00	00:00:00		0	0	
spring 95	math	241	01a	found/struct	246	09:40:00	10:50:00	csb	4	4	ardolf	121	30		n		00:00:00	00:00:00		0	0	
spring 95	math	241	02a	found/struct	135	09:40:00	10:50:00	sju	4	4	science	231	30		n		00:00:00	00:00:00		0	0	
spring 95	math	320	01a	combinatorics	246	09:40:00	10:50:00	sju	4	4	science	213	30		n		00:00:00	00:00:00		0	0	
spring 95	math	332	01a	algebraic struct ii	135	09:40:00	10:50:00	sju	4	4	science	233	30		n		00:00:00	00:00:00		0	0	
spring 95	math	337	01a	diff equations	246	13:00:00	14:10:00	csb	4	4	bac	104	30		n		00:00:00	00:00:00		0	0	
spring 95	math	341	01a	fourier series	135	13:00:00	14:10:00	sju	4	4	science	215	30		n		00:00:00	00:00:00		0	0	
spring 95	math	343	01a	analysis i	246	11:20:00	12:30:00	csb	4	4	ardolf	105	30		n		00:00:00	00:00:00		0	0	
spring 95	math	346	01a	math stat ii	135	11:20:00	12:30:00	sju	4	4	science	231	30		n		00:00:00	00:00:00		0	0	

Faculty member information for Mathematics Department Spring term 1995:

dept	faculty member	active		time	work load	course preferences				previous courses				ten,	yrs,	degree,	priority,	chair
math	brodie, marc	y		either	full time	239	114	119	124					n	1	phd	11	n
math	byrne, phil	y		either	full time	241	120	119	124	120	122	241	114	y	9	phd	7	n
math	dumonceaux, robert	y		either	full time	346	124	120	322	124	121	120	119	y	30	phd	2	n
math	galovich, jennifer	y		am	full time	241	320	122	341	241	119	120	122	y	8	phd	8	n
math	gass, michael	y		either	full time	124	114	332	343	120	123	346	241	y	9	phd	6	y
math	gulati, shobha	y		either	full time	124	124	343	120	320	122	120	119	y	6	phd	9	n
math	hartz, dave	y		either	full time	343	114	120	346	337	121	124	239	n	4	phd	10	n
math	lange, jack	y		either	full time	341	122	120	124	124	120	337	346	y	33	phd	1	n
math	lenz, jerry	y		either	full time	124	241	120	121	120	119	239	346	y	29	ms	3	n
math	sibley, tom	y		am	full time	121	332	124	120	124	332	120	119	y	10	phd	5	n

math tangredi, mike y either full time 123 120 337 239 332 124 119 346 y 14 phd 4 n

Final class schedule for the Mathematics Department Spring term 1995:

term	dept	course/sec	title	days	start	end	loc	credits	building/rm		limit, flags, faculty member, lab information								
spring 95	math	114 01a	math exploration	246	08:00:00	09:10:00	sju	4 4	science	233	30 mt	gass, michael							
spring 95	math	114 02a	math exploration	246	09:40:00	10:50:00	sju	4 4	science	231	30 mt	hartz, dave							
spring 95	math	119 01a	calculus i	246	08:00:00	09:10:00	csb	4 4	ardolf	142	30 mt	brodie, marc	35	14:40:00	15:50:00	csb	0 0	ardolf	127 brodie, marc
spring 95	math	119 02a	calculus i	135	09:40:00	10:50:00	sju	4 4	science	215	30 mt	byrne, phil	24	14:40:00	15:50:00	sju	0 0	science	213 byrne, phil
spring 95	math	120 01a	calculus ii	246	08:00:00	09:10:00	sju	4 4	science	215	30 mt	byrne, phil	35	08:00:00	09:10:00	sju	0 0	science	215 byrne, phil
spring 95	math	120 02a	calculus ii	135	09:40:00	10:50:00	csb	4 4	hab	101	30 mt	lenz, jerry	24	14:40:00	15:50:00	csb	0 0	hab	015 lenz, jerry
spring 95	math	120 03a	calculus ii	135	11:20:00	12:30:00	csb	4 4	hab	101	30 mt	lange, jack	24	08:00:00	09:10:00	csb	0 0	hab	015 lange, jack
spring 95	math	120 04a	calculus ii	135	14:40:00	15:50:00	csb	4 4	hab	101	30 mt	tangredi, mike	24	14:40:00	15:50:00	csb	0 0	hab	101 tangredi, mike
spring 95	math	121 01a	fund of math	246	08:00:00	09:10:00	csb	4 4	hab	102b	30 mt	sibley, tom							
spring 95	math	121 02a	fund of math	246	09:40:00	10:50:00	csb	4 4	hab	012b	30 mt	lenz, jerry							
spring 95	math	122 01a	finite math	135	08:00:00	09:10:00	sju	4 4	science	231	30 mt	lange, jack							
spring 95	math	122 02a	finite math	135	11:20:00	12:30:00	sju	4 4	science	233	30 mt	galovich, jennifer							
spring 95	math	123 01a	essential calc	135	11:20:00	12:30:00	csb	4 4	ardolf	105	30 mt	tangredi, mike	24	08:00:00	09:10:00	csb	0 0	ardolf	105 tangredi, mike
spring 95	math	124 01a	prob stat infer	135	08:00:00	09:10:00	csb	4 4	ardolf	105	30 mt	lenz, jerry							
spring 95	math	124 02a	prob stat infer	135	09:40:00	10:50:00	csb	4 4	ardolf	107	30 mt	gass, michael							
spring 95	math	124 03a	prob stat infer	246	09:40:00	10:50:00	sju	4 4	science	215	30 mt	gulati, shobha							
spring 95	math	124 04a	prob stat infer	246	11:20:00	12:30:00	sju	4 4	science	213	30 mt	dumonceaux, robert							
spring 95	math	124 05a	prob stat infer	135	11:20:00	12:30:00	sju	4 4	science	213	30 mt	gulati, shobha							
spring 95	math	124 06a	prob stat infer	246	11:20:00	12:30:00	sju	4 4	science	231	30 mt	sibley, tom							
spring 95	math	124 07a	prob stat infer	246	13:00:00	14:10:00	sju	4 4	science	231	30 mt	gulati, shobha							
spring 95	math	124 08a	prob stat infer	135	14:40:00	15:50:00	sju	4 4	science	233	30 mt	dumonceaux, robert							
spring 95	math	239 01a	linear algebra	246	13:00:00	14:10:00	csb	4 4	hab	101	30	brodie, marc							
spring 95	math	241 01a	found/struct	246	09:40:00	10:50:00	csb	4 4	ardolf	121	30	byrne, phil							
spring 95	math	241 02a	found/struct	135	09:40:00	10:50:00	sju	4 4	science	231	30	galovich, jennifer							
spring 95	math	320 01a	combinatorics	246	09:40:00	10:50:00	sju	4 4	science	213	30	galovich, jennifer							
spring 95	math	332 01a	algebraic struct ii	135	09:40:00	10:50:00	sju	4 4	science	233	30	sibley, tom							
spring 95	math	337 01a	diff equations	246	13:00:00	14:10:00	csb	4 4	bac	104	30	tangredi, mike							
spring 95	math	341 01a	fourier series	135	13:00:00	14:10:00	sju	4 4	science	215	30	lange, jack							
spring 95	math	343 01a	analysis i	246	11:20:00	12:30:00	csb	4 4	ardolf	105	30	hartz, dave							
spring 95	math	346 01a	math stat ii	135	11:20:00	12:30:00	sju	4 4	science	231	30	dumonceaux, robert							

Class information for Computer Science Department Fall term 1994:

term	dept	course/sec		title	days	start	end	loc	credit		building/rm		limit	flags	lab	lab information						
fall 94	csci	120	01a	intro to computing	24	08:00:00	09:10:00	sju	4	4	science	215	25	qr	y	6	08:00:00	09:10:00	sju	0	0	engel g60
fall 94	csci	150	01a	intro/comp science	246	08:00:00	09:10:00	csb	4	4	ardolf	104	15	qr, ns	y	1	08:00:00	10:50:00	sju	0	0	science 217
fall 94	csci	150	02a	intro/comp science	246	08:00:00	09:10:00	csb	4	4	ardolf	104	15	qr, ns	y	3	08:00:00	10:50:00	sju	0	0	science 217
fall 94	csci	150	03a	intro/comp science	135	14:40:00	15:50:00	sju	4	4	science	233	15	qr	y	6	08:00:00	10:50:00	sju	0	0	science 217
fall 94	csci	150	04a	intro/comp science	135	14:40:00	15:50:00	sju	4	4	science	233	15	qr, ns	y	4	08:00:00	10:50:00	sju	0	0	science 217
fall 94	csci	160	01a	prob-solv/prog & com	246	09:40:00	10:50:00	csb	4	4	ardolf	105	15		y	5	08:00:00	10:50:00	sju	0	0	science 217
fall 94	csci	160	02a	prob-solv/prog & com	246	09:40:00	10:50:00	csb	4	4	ardolf	105	15		y	5	13:00:00	15:50:00	sju	0	0	science 217
fall 94	csci	200	01a	data structures	135	09:40:00	10:50:00	sju	4	4	science	215	15	writ	y	4	13:00:00	15:50:00	sju	0	0	science 217
fall 94	csci	330	01a	business systems	135	13:00:00	14:10:00	sju	4	4	science	233	30		n		00:00:00	00:00:00		0	0	
fall 94	csci	338	01a	algorithms	246	13:00:00	14:10:00	sju	4	4	science	215	30	writ	n		00:00:00	00:00:00		0	0	

Faculty member information for Computer Science Department Fall term 1994:

dept	faculty member	active	time	work load	course preferences	previous courses	set priority, tenure, yrs, degree, priority, chair
csci	challou, dan	y	either	full time	160 150 317 120 150 330 317		3 3 n
csci	holey, andy	y	either	full time	350 210 150 160 150 160 200 317		n 4 phd 2 n
csci	miller, john	y	either	full time	210 120 150 160 120 150 160 210		n 1 ms 4 n
csci	ziegler, lynn	y	either	full time	160 210 350 120 200 338 150 160 1		1 y

Final class schedule for the Computer Science Department Fall term 1994:

term	dept	course/sec		title	days	start	end	loc	credits		building/rm		limit, flags, faculty member, lab information										
fall 94	csci	120	01a	intro to computing	24	08:00:00	09:10:00	sju	4	4	science	215	25	qr	ziegler, lynn	6	08:00:00	09:10:00	sju	0	0	engel g60	ziegler, lynn
fall 94	csci	150	01a	intro/comp science	246	08:00:00	09:10:00	csb	4	4	ardolf	104	15	qr, ns	challou, dan	1	08:00:00	10:50:00	sju	0	0	science 217	challou, dan
fall 94	csci	150	02a	intro/comp science	246	08:00:00	09:10:00	csb	4	4	ardolf	104	15	qr, ns	challou, dan	3	08:00:00	10:50:00	sju	0	0	science 217	challou, dan
fall 94	csci	150	03a	intro/comp science	135	14:40:00	15:50:00	sju	4	4	science	233	15	qr	holey, andy	6	08:00:00	10:50:00	sju	0	0	science 217	holey, andy
fall 94	csci	150	04a	intro/comp science	135	14:40:00	15:50:00	sju	4	4	science	233	15	qr, ns	holey, andy	4	08:00:00	10:50:00	sju	0	0	science 217	holey, andy
fall 94	csci	160	01a	prob-solv/prog & com	246	09:40:00	10:50:00	csb	4	4	ardolf	105	15		ziegler, lynn	5	08:00:00	10:50:00	sju	0	0	science 217	ziegler, lynn
fall 94	csci	160	02a	prob-solv/prog & com	246	09:40:00	10:50:00	csb	4	4	ardolf	105	15		ziegler, lynn	5	13:00:00	15:50:00	sju	0	0	science 217	ziegler, lynn
fall 94	csci	200	01a	data structures	135	09:40:00	10:50:00	sju	4	4	science	215	15	writ	miller, john	4	13:00:00	15:50:00	sju	0	0	science 217	miller, john
fall 94	csci	330	01a	business systems	135	13:00:00	14:10:00	sju	4	4	science	233	30		challou, dan								
fall 94	csci	338	01a	algorithms	246	13:00:00	14:10:00	sju	4	4	science	215	30	writ	holey, andy								

Class information for Computer Science Department Spring term 1995:

term	dept	course/sec	title	days	start	end	loc	credit	building/rm		limit	flags	lab	lab information						
spring 95	csci	120 01a	intro to computing	2	08:00:00	09:10:00	csb	4 4	ardolf	104	25	qr	y	46	08:00:00	09:10:00	csb	0 0	main	356
spring 95	csci	150 01a	intro/comp science	246	09:40:00	10:50:00	sju	4 4	science	215	13	ns, qr	y	1	08:00:00	10:50:00	sju	0 0	science	217
spring 95	csci	150 02a	intro/comp science	246	09:40:00	10:50:00	sju	4 4	science	215	13	ns, qr	y	6	13:00:00	15:50:00	sju	0 0	science	217
spring 95	csci	150 03a	intro/comp science	246	14:40:00	15:50:00	csb	4 4	ardolf	104	13	ns, qr	y	6	08:00:00	10:50:00	sju	0 0	science	217
spring 95	csci	150 04a	intro/comp science	246	14:40:00	15:50:00	csb	4 4	ardolf	104	13	ns, qr	y	1	13:00:00	15:50:00	sju	0 0	science	217
spring 95	csci	160 01a	problem-solv/prog	246	14:40:00	15:50:00	sju	4 4	science	215	15		y	3	08:00:00	10:50:00	sju	0 0	science	217
spring 95	csci	160 02a	problem-solv/prog	246	14:40:00	15:50:00	sju	4 4	science	215	15		y	3	13:00:00	15:50:00	sju	0 0	science	217
spring 95	csci	210 01a	arch, lang, and apps	246	09:40:00	10:50:00	csb	4 4	ardolf	104	15		y	5	08:00:00	10:50:00	sju	0 0	science	217
spring 95	csci	210 02a	arch, lang, and apps	246	09:40:00	10:50:00	csb	4 4	ardolf	104	15		y	5	13:00:00	15:50:00	sju	0 0	science	217
spring 95	csci	317 01a	topics - graphics	246	11:20:00	12:30:00	sju	4 4	science	215	30		n		00:00:00	00:00:00		0 0		
spring 95	csci	350 01a	operating systems	246	14:40:00	15:50:00	sju	4 4	science	233	30	disc	n		00:00:00	00:00:00		0 0		

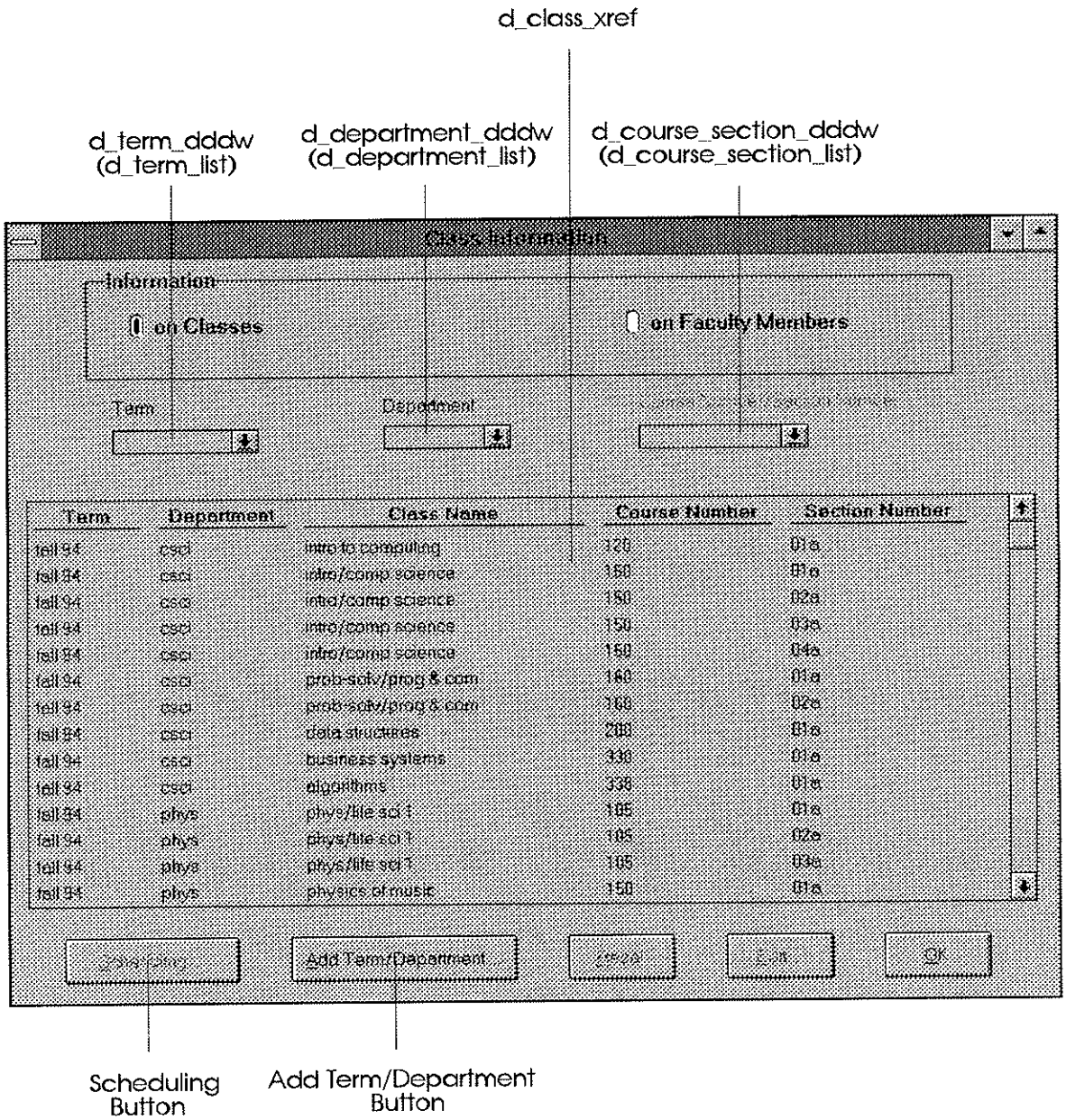
Faculty member information for Computer Science Department Spring term 1995:

dept	faculty member	active	time	work load	course preferences				previous courses				set priority, tenure, yrs, degree, priority, chair					
csci	challou, dan	y	either	full time	160	150	330	120	150	330	317		3				3	n
csci	holey, andy	y	either	full time	338	200	150	160	150	160	200	317		n	4	phd	2	n
csci	miller, john	y	either	full time	200	120	150	160	120	150	160	210		n	1	ms	4	n
csci	ziegler, lynn	y	either	full time	160	200	338	120	200	338	150	160	1				1	y

Final class schedule for the Computer Science Department Spring term 1995:

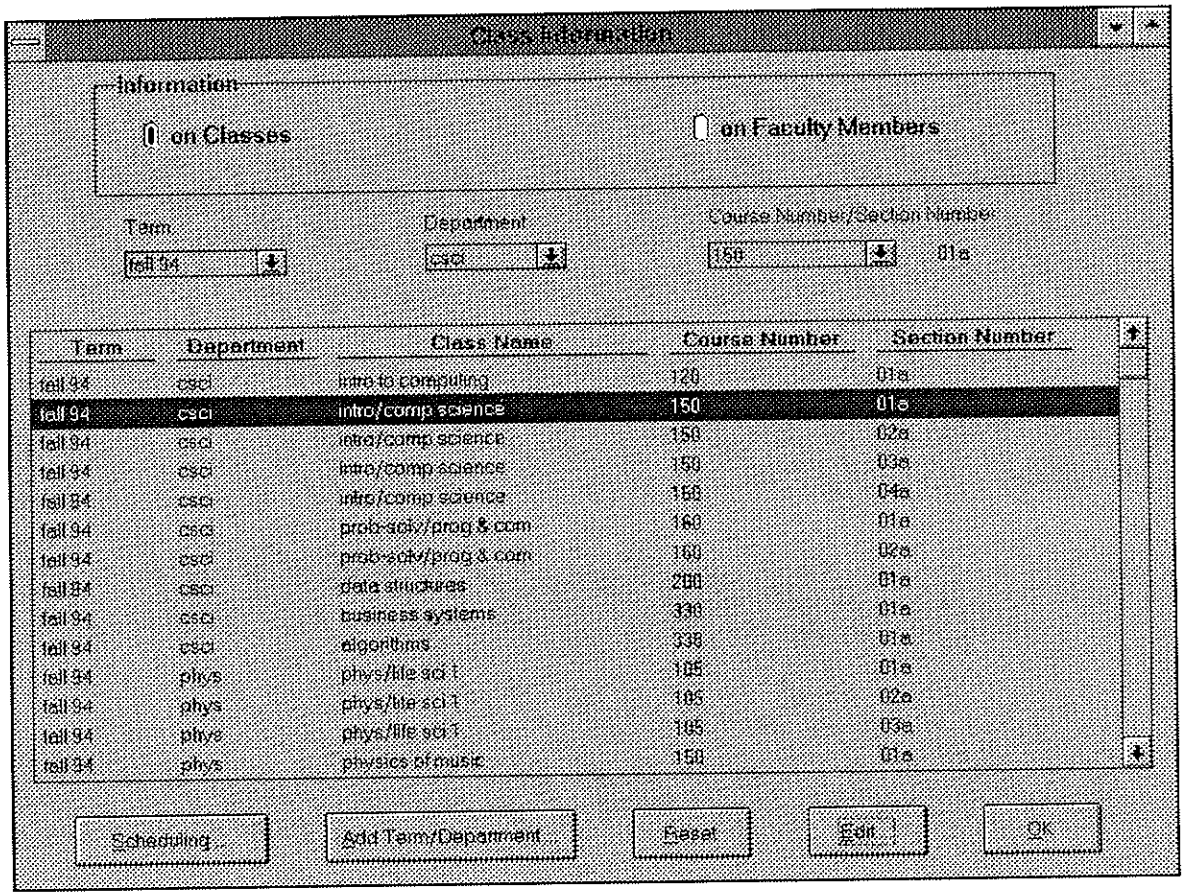
term	dept	course/sec	title	days	start	end	loc	credits	building/rm		limit, flags, faculty member, lab information										
spring 95	csci	120 01a	intro to computing	2	08:00:00	09:10:00	csb	4 4	ardolf	104	25	qr	ziegler, lynn	46	08:00:00	09:10:00	csb	0	0 main	356	ziegler, lynn
spring 95	csci	150 01a	intro/comp science	246	09:40:00	10:50:00	sju	4 4	science	215	13	ns, qr	challou, dan	1	08:00:00	10:50:00	sju	0	0 science	217	challou, dan
spring 95	csci	150 02a	intro/comp science	246	09:40:00	10:50:00	sju	4 4	science	215	13	ns, qr	challou, dan	6	13:00:00	15:50:00	sju	0	0 science	217	challou, dan
spring 95	csci	160 01a	problem-solv/prog	246	14:40:00	15:50:00	sju	4 4	science	215	15		ziegler, lynn	3	08:00:00	10:50:00	sju	0	0 science	217	ziegler, lynn
spring 95	csci	160 02a	problem-solv/prog	246	14:40:00	15:50:00	sju	4 4	science	215	15		ziegler, lynn	3	13:00:00	15:50:00	sju	0	0 science	217	ziegler, lynn
spring 95	csci	210 01a	arch, lang, and apps	246	09:40:00	10:50:00	csb	4 4	ardolf	104	15		miller, john	5	08:00:00	10:50:00	sju	0	0 science	217	miller, john
spring 95	csci	210 02a	arch, lang, and apps	246	09:40:00	10:50:00	csb	4 4	ardolf	104	15		miller, john	5	13:00:00	15:50:00	sju	0	0 science	217	miller, john
spring 95	csci	317 01a	topics - graphics	246	11:20:00	12:30:00	sju	4 4	science	215	30		challou, dan								
spring 95	csci	350 01a	operating systems	246	14:40:00	15:50:00	sju	4 4	science	233	30	disc	holey, andy								

APPENDIX B



w_class_main_test

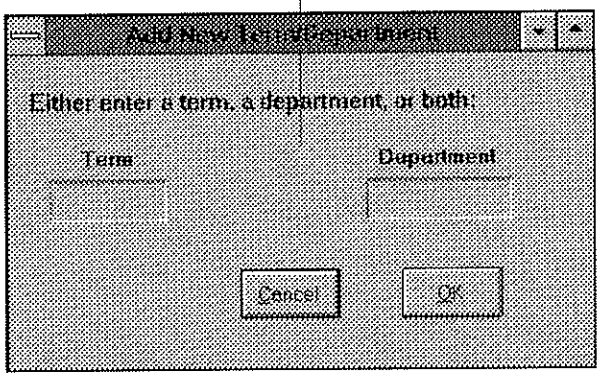
Showing uo_class_main with initial data



w_class_main_test

Showing uo_class_main with data

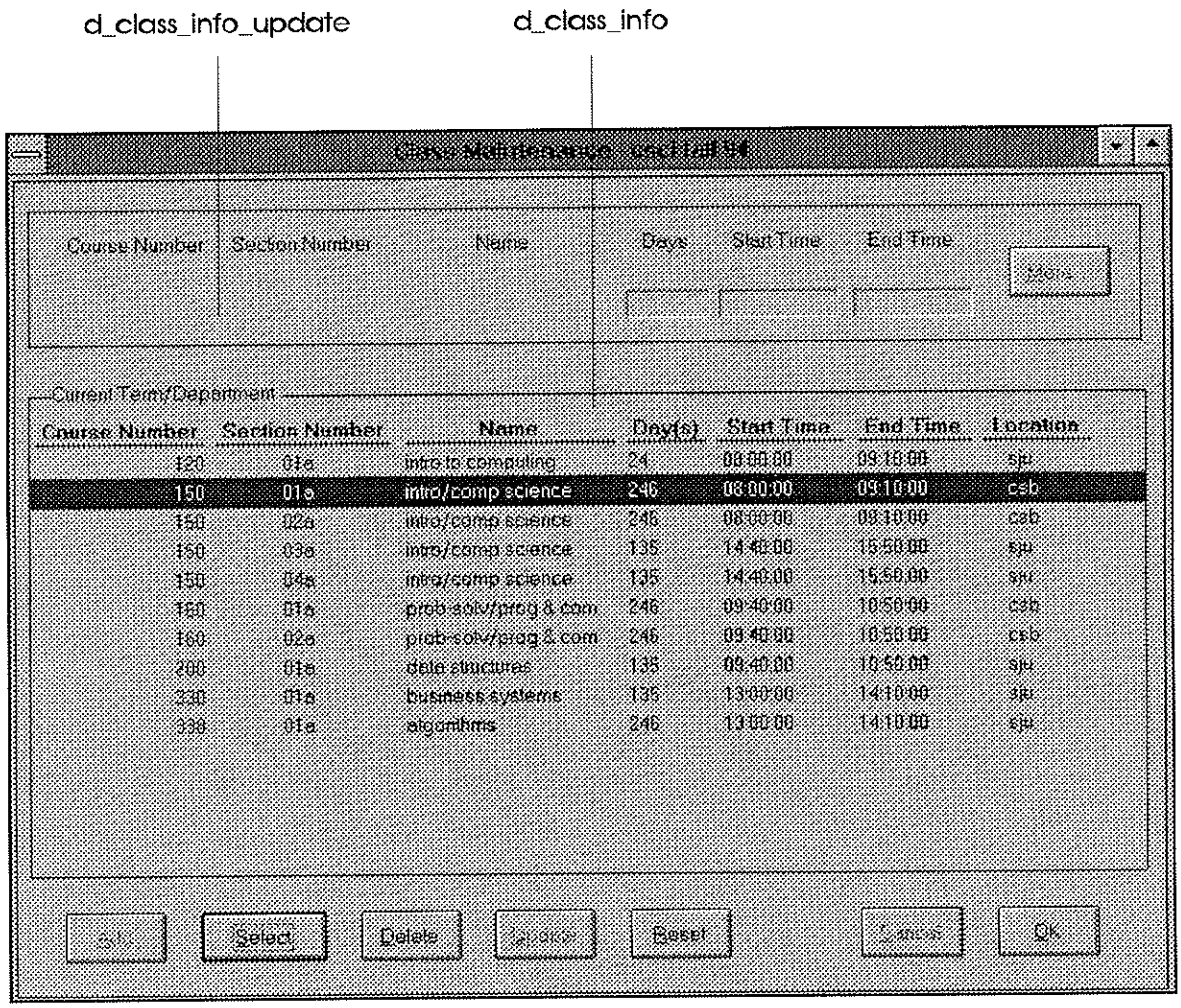
d_add_dept_term



- Includes two hidden data windows:
  1. d_department_list
  2. d_term_list

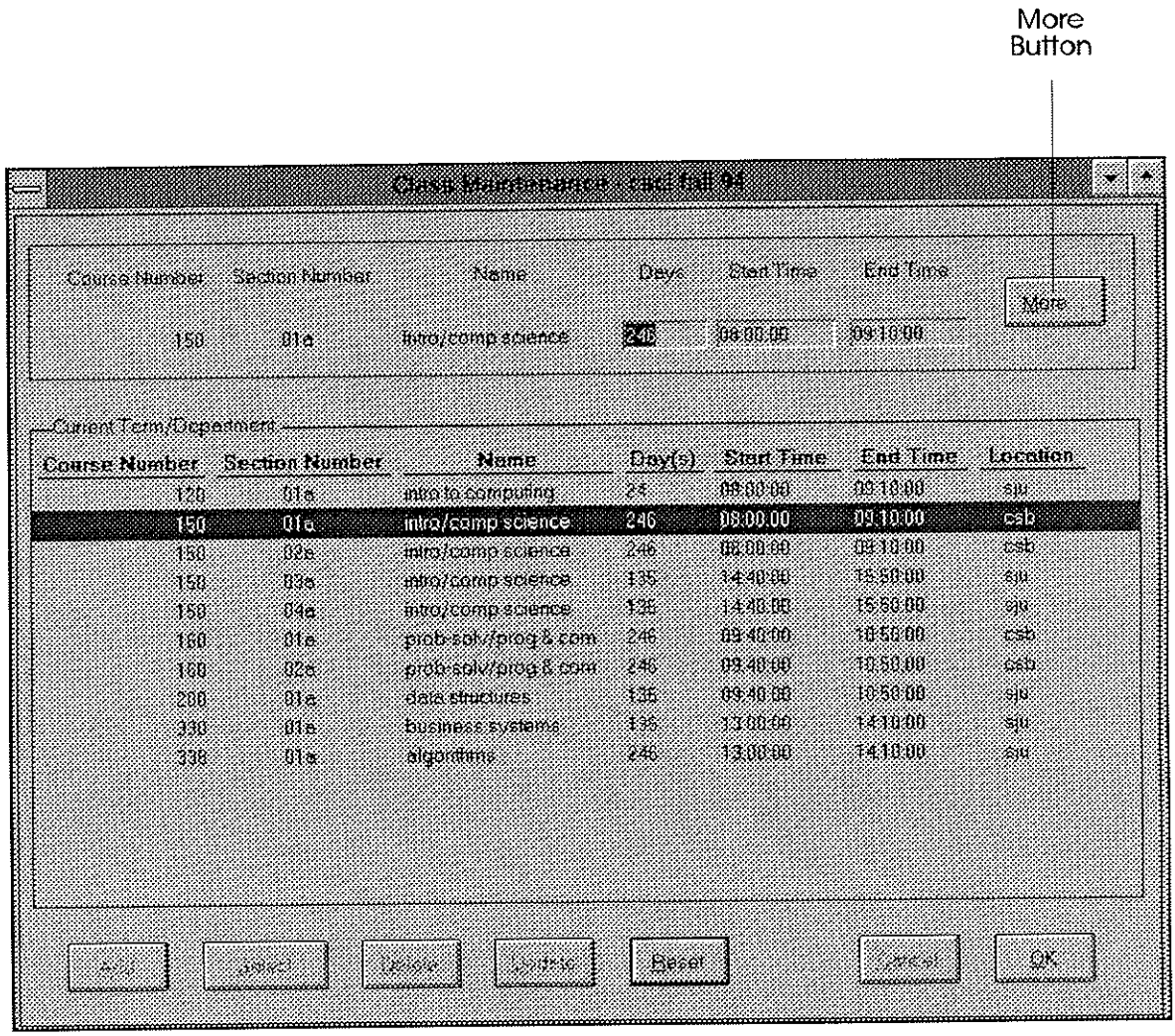
w_add_term_dept

Invoked in response to Add Term/Department Button



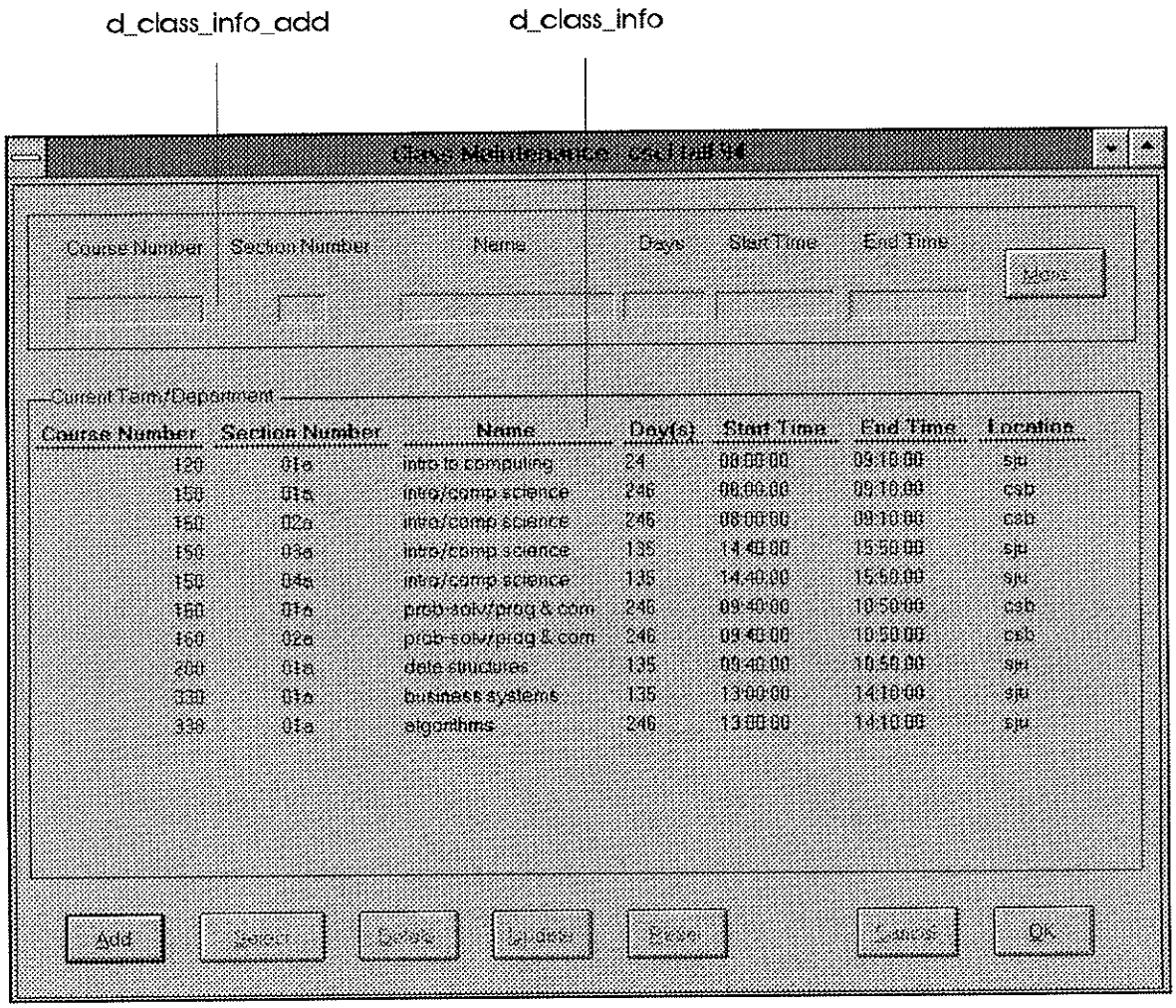
w_maint_main (Includes uo_class_maint)

Invoked in response to Edit Button



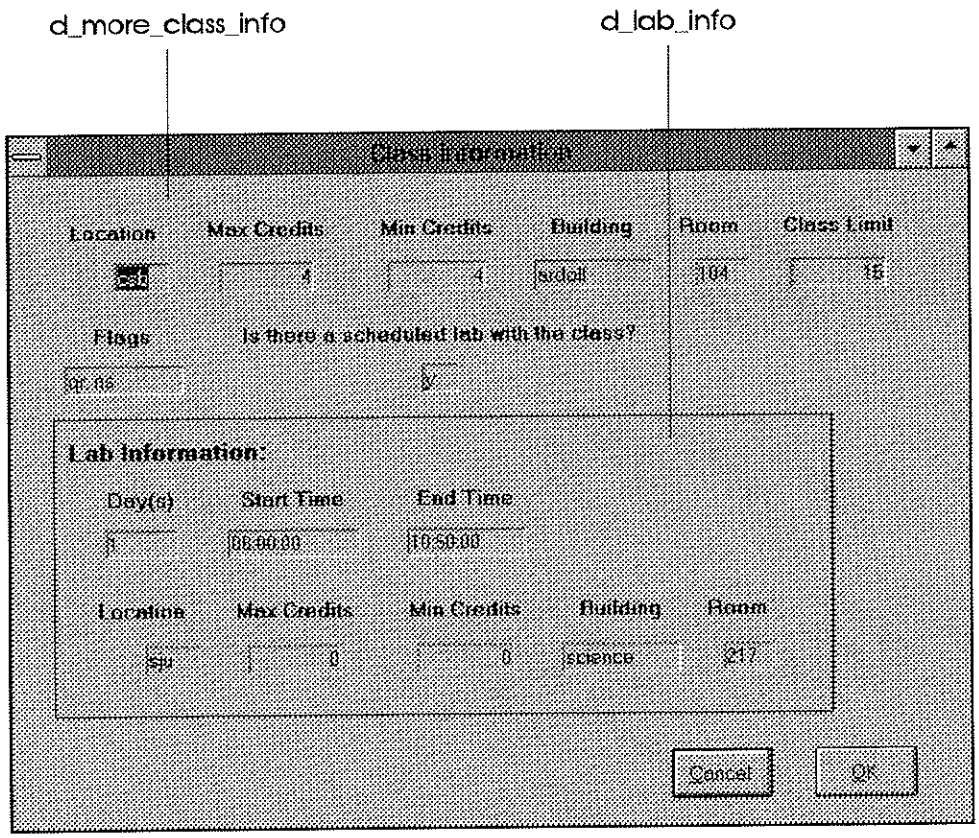
w_maint_main (Includes uo_class_maint)

Invoked in response to Edit Button
and
Select Button



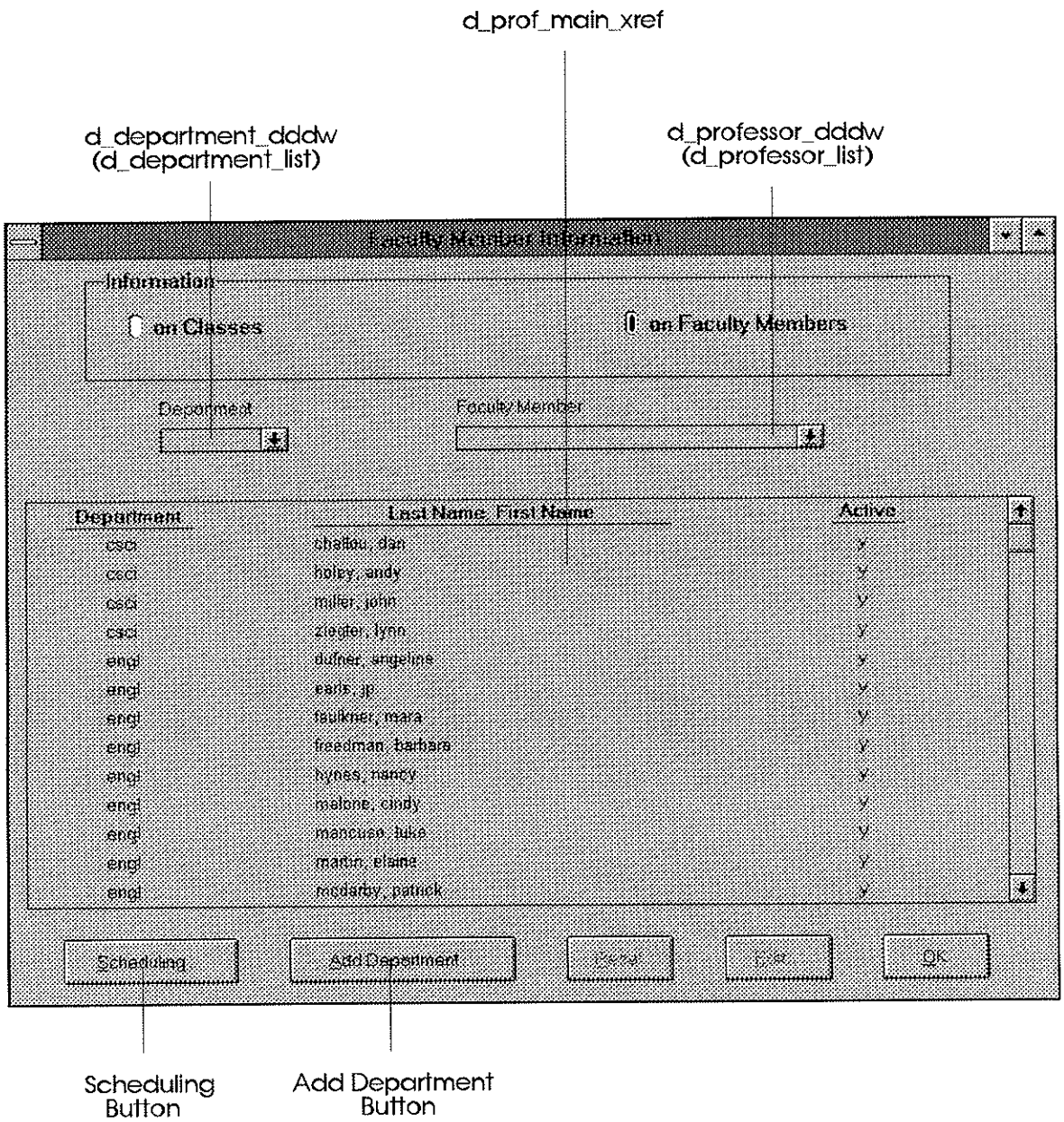
w_maint_main (Includes uo_class_maint)

Invoked in response to Reset Button



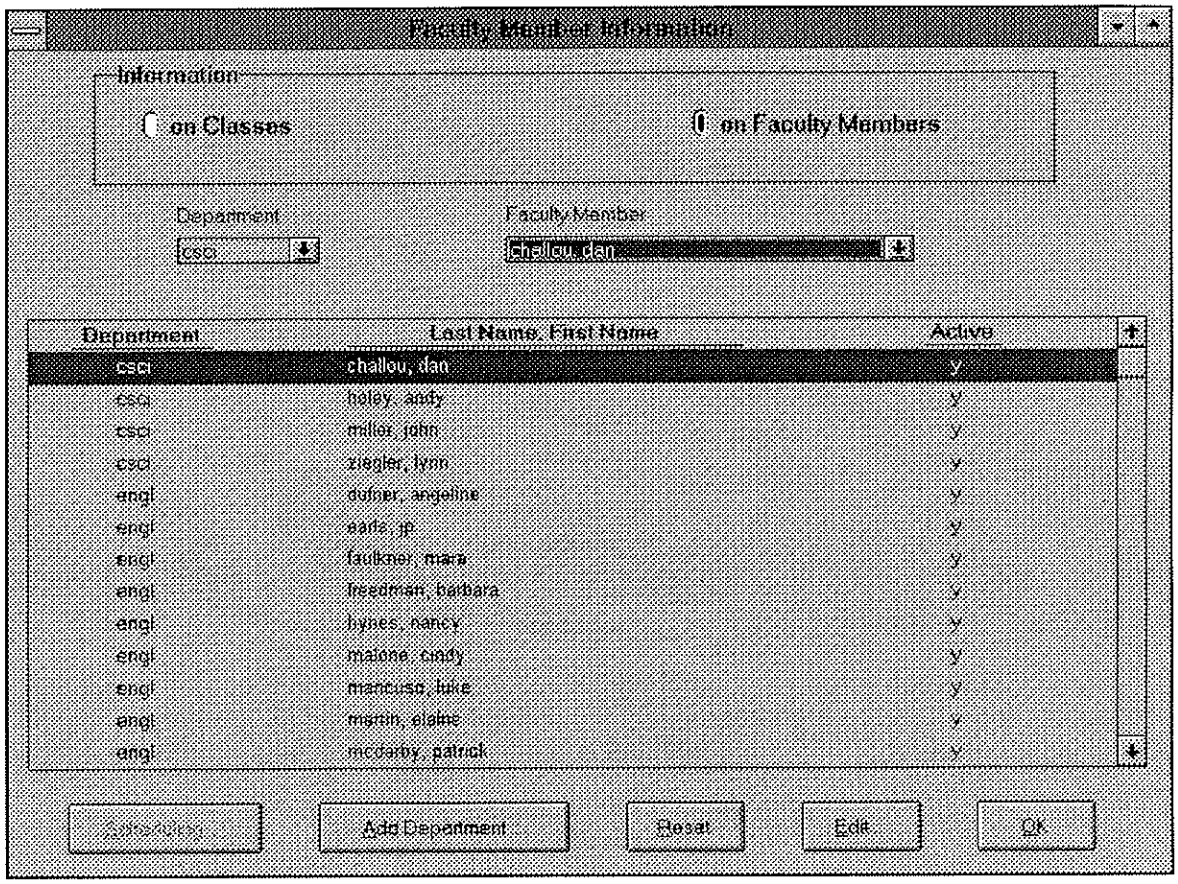
w_more_class_info

Invoked with More Button



w_class_main_test

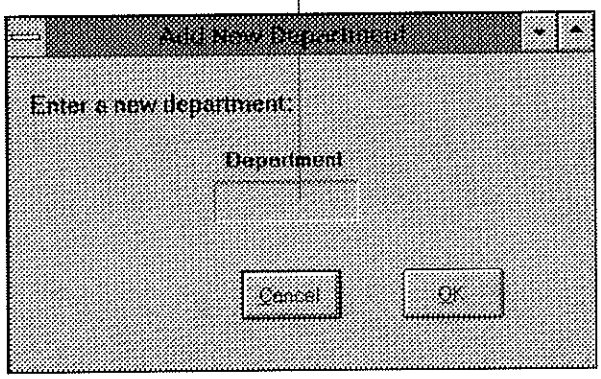
Showing uo_prof_main with initial data



w_class_main_test

Showing uo_prof_main with data

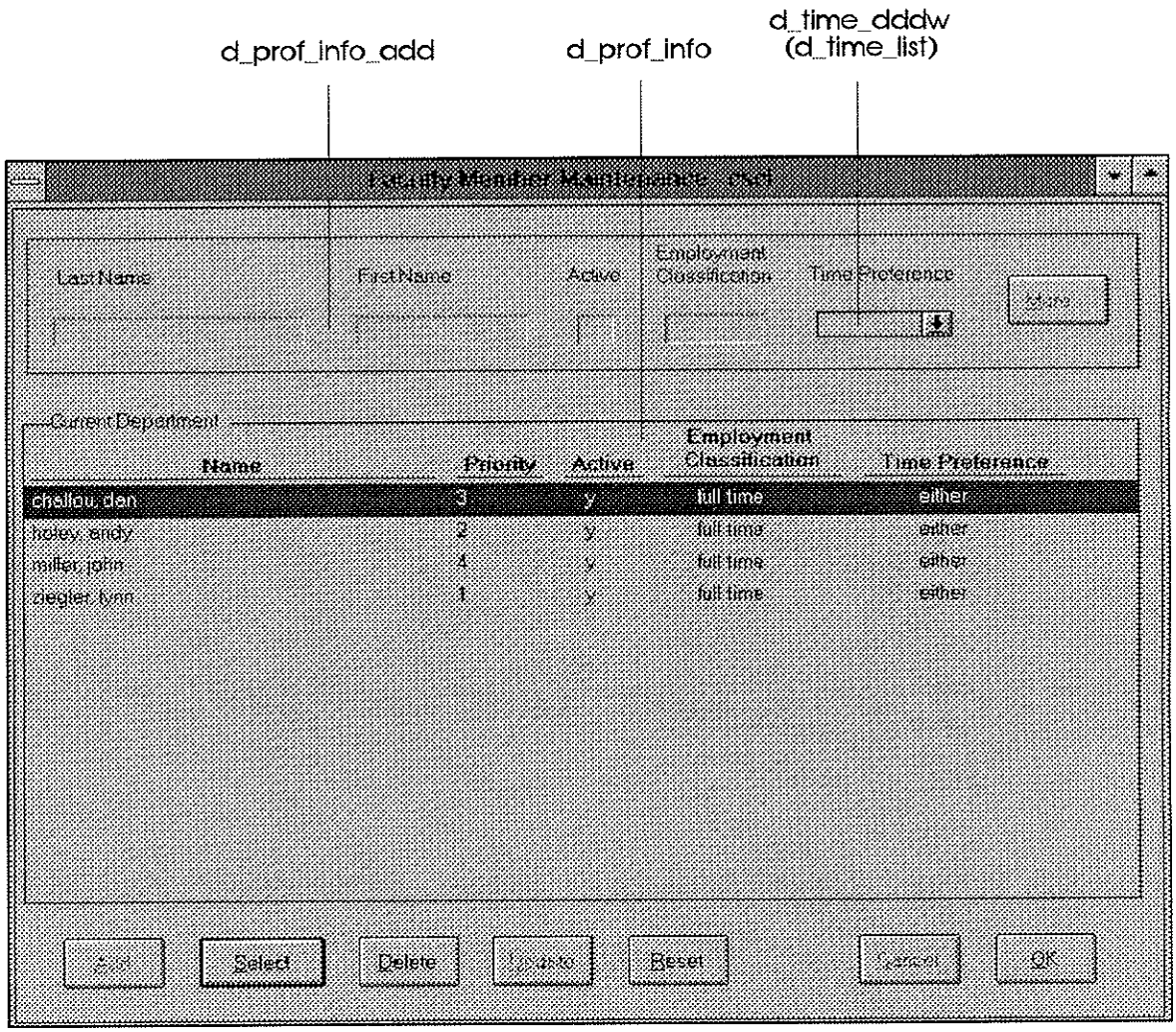
d_add_dept



- Includes two hidden data windows:
  1. d_department_list
  2. d_term_list

w_add_dept

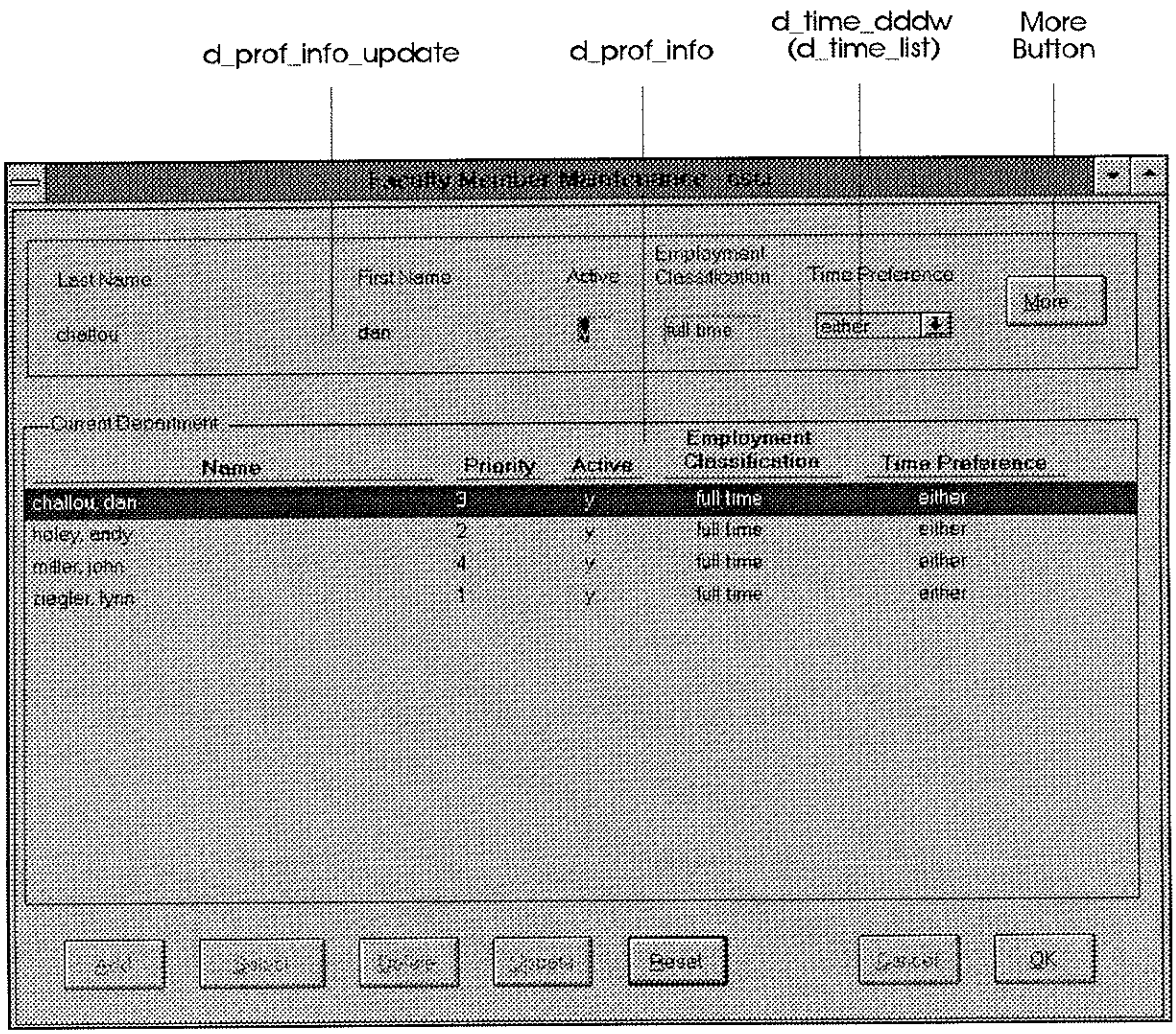
Invoked in response to Add Department Button



- Includes hidden data window:
  1. d_professor
- Uses functions:
  1. last_name_length
  2. calc_priority

w_maint_main (includes uo_prof_maint)

Invoked in response to Edit Button

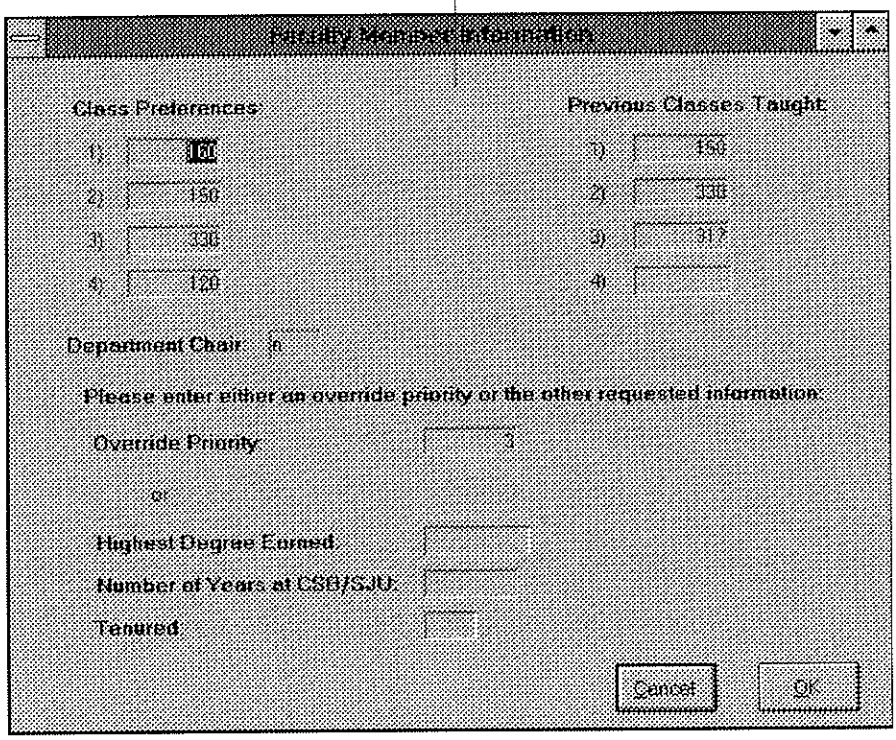


- Includes hidden data window:
  1. d_professor
- Uses functions:
  1. last_name_length
  2. calc_priority

w_maint_main (Includes uo_prof_maint)

Invoked in response to Edit Button
and
Select Button

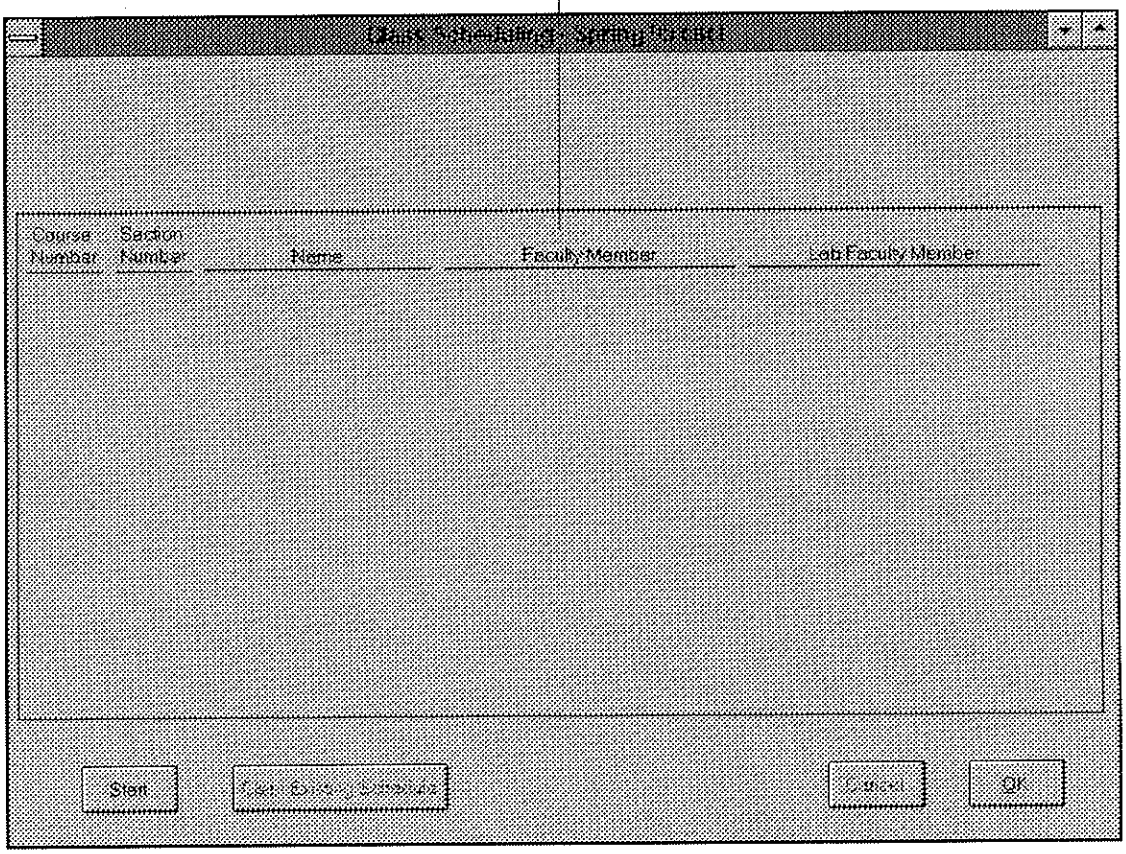
d_more_prof_info



w_more_prof_info

Invoked with More Button

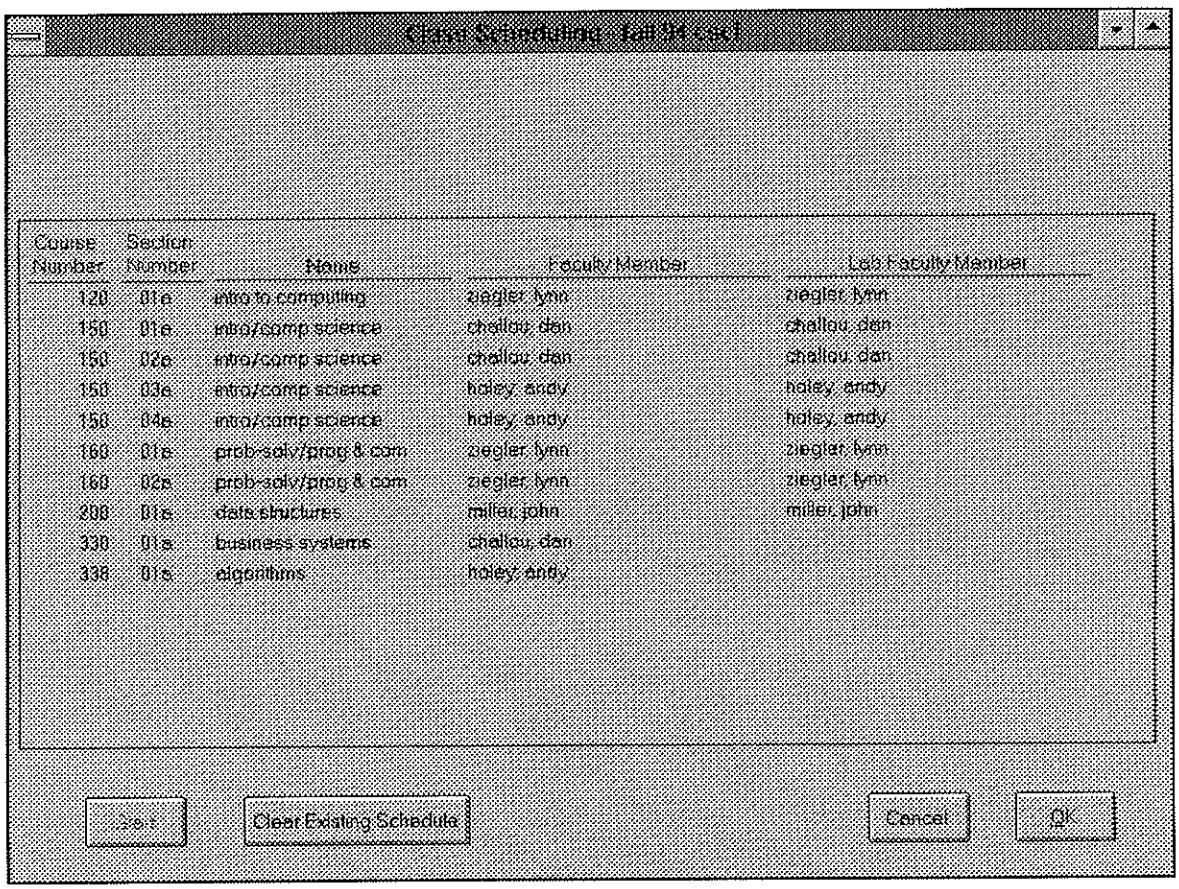
d_final_schedule



- Includes four hidden data windows:
  1. d_class_info_schedule
  2. d_prof_info_schedule
  3. d_extra_classes
  4. d_assign_prof_long
- Uses functions:
  1. add_class_lab
  2. delete_class_lab
  3. num_periods

w_scheduling

Invoked in response to Scheduling Button



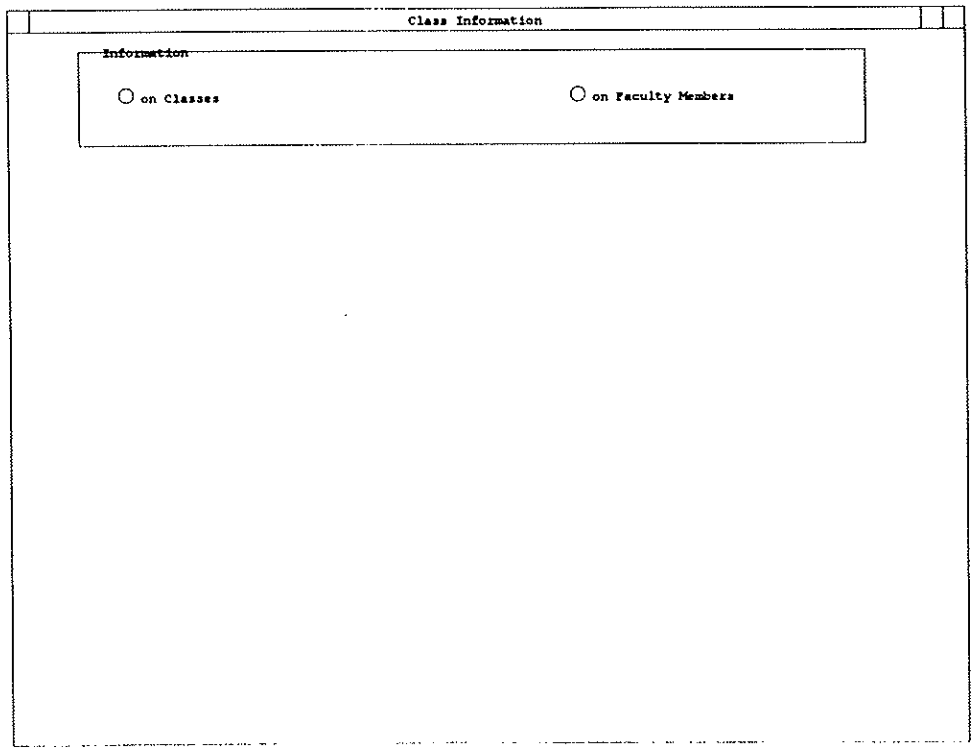
w_scheduling (with data from run)

Data created by Start Button

Script : open for schedule

```
sqlca.DBMS       = ProfileString("schedule.ini","sqlca","dbms","")
sqlca.database   = ProfileString("schedule.ini","sqlca","database","")
sqlca.userid     = ProfileString("schedule.ini","sqlca","userid","")
sqlca.dbpass     = ProfileString("schedule.ini","sqlca","dbpass","")
sqlca.logid      = ProfileString("schedule.ini","sqlca","logid","")
sqlca.logpass    = ProfileString("schedule.ini","sqlca","logpass","")
sqlca.servername = ProfileString("schedule.ini","sqlca","servername","")
sqlca.dbparm     = ProfileString("schedule.ini","sqlca","dbparm","")

connect;
if sqlca.sqlcode <> 0 then
   MessageBox ("Sorry! Cannot Connect to Database " + string(sqlca.sqlcode), sqlca.sqlerrtext)
   return
end if

open(w_class_main_test)
```

Window: w_class_main_test
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:22:34



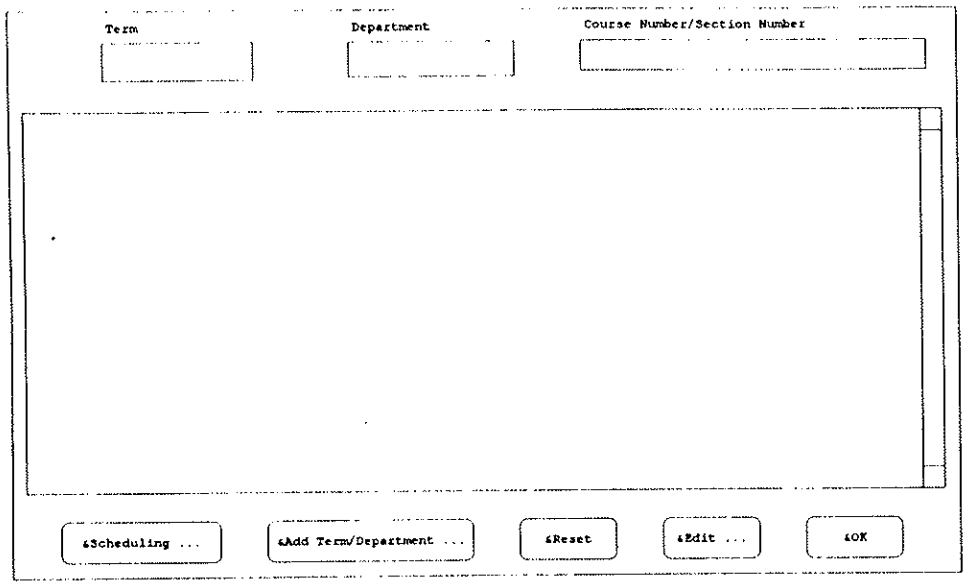
```
Window: w_class_main_test
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:22:34


Window: w_class_main_test
X = 919             Y = 593             Width = 2844        Height = 1905
Visible = true      Enabled = true      TitleBar = true     Title = "Class Information"
ControlMenu = true  MinBox = true       MaxBox = true       Resizable = true
WindowType = main!  WindowState = normal!                   BackColor = 12632256

Instance Variables


End of Instance Variables


Script for: open  event
//Pastes the user object uo_class_main on the window to display the class information.

// Local Variables

// End Local Variables

OpenUserObject(uo_class_main, 10, 325)
gv_s_MainUoType = "class"


End of Script



StaticText: st_1
X = 270             Y = 21              Width = 298         Height = 69
TabOrder = 0        Visible = true      Text = "Information"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!
```

```
Window: w_class_main_test
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:22:34


RadioButton: rb_professors
X = 1669            Y = 133             Width = 641         Height = 69
TabOrder = 0        Visible = true      Enabled = true      Text = "on Faculty Members"
Automatic = true    TextColor = 33554432                    BackColor = 12632256
BorderStyle = stylelowered!

Script for: clicked  event
//Pastes the user object uo_prof_main and displays faculty member information.

IF (gv_s_MainUoType = "class") THEN
   SetRedraw(w_class_main_test, FALSE)
   CloseUserObject(uo_class_main)
   OpenUserObject(uo_prof_main, 10, 325)
   gv_s_MainUoType = "prof"
   w_class_main_test.Title = "Faculty Member Information"
   SetRedraw(w_class_main_test, TRUE)
END IF

End of Script


RadioButton: rb_class
X = 330             Y = 133             Width = 458         Height = 69
TabOrder = 0        Visible = true      Enabled = true      Text = "on Classes"
Automatic = true    Checked = true      TextColor = 33554432
BackColor = 12632256                    BorderStyle = stylelowered!

Script for: clicked  event
//Pastes the user object uo_class_main to display the class information.

IF (gv_s_MainUoType = "prof") THEN
   SetRedraw(w_class_main_test, FALSE)
   CloseUserObject(uo_prof_main)
```

```
   OpenUserObject(uo_class_main, 10, 325)
   gv_s_MainUoType = "class"
   w_class_main_test.Title = "Class Information"
   SetRedraw(w_class_main_test, TRUE)
END IF

End of Script
```

```
Rectangle: r_1
X = 211             Y = 53              Width = 2337        Height = 245
Visible = true      LineColor = 0       FillColor = 12632256
FillPattern = solid!                    LineStyle = continuous!
LineThickness = 5
```

User Object: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58



User Object: uo_class_main
X = 0 Y = 0 Width = 2812 Height = 1473
TabOrder = 0 Visible = true Enabled = true BackColor = 12632256
ObjectType = customvisual!

Instance Variables
DataWindowChild iv_dwc_Term
DataWindowChild iv_dwc_Department
DataWindowChild iv_dwc_CourseSection

Boolean iv_b_SelectionMade
Boolean iv_b_TabDone

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

Boolean         iv_b_UpDownArrowDone


End of Instance Variables


Script for: constructor  event
//Retrieves all datawindow information from the database used by
//the user object.

// Local Variables

// End Local Variables

dwGetChild(dw_term, "term", iv_dwc_term)
dwGetChild(dw_department, "department", iv_dwc_department)
dwGetChild(dw_course_section, "course_num", iv_dwc_CourseSection)

SetTransObject(iv_dwc_term, SQLCA)
SetTransObject(iv_dwc_department, SQLCA)
SetTransObject(iv_dwc_CourseSection, SQLCA)
SetTransObject(dw_term, SQLCA)
SetTransObject(dw_department, SQLCA)
SetTransObject(dw_course_section, SQLCA)
SetTransObject(dw_class_xref, SQLCA)

Retrieve(dw_term)
Retrieve(dw_department)
Retrieve(dw_class_xref)

SetSort(dw_term, "term A")
SetSort(iv_dwc_term, "term A")
SetSort(dw_department, "department A")
SetSort(iv_dwc_department, "department A")

Sort(dw_term)
```

User Object: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
Sort(iv_dwc_term)
Sort(dw_department)
Sort(iv_dwc_department)

SetSort(dw_class_xref, "term A, department A, course_num A, section_num A")
Sort(dw_class_xref)

InsertRow(dw_term, 1)
InsertRow(dw_department, 1)
InsertRow(dw_course_section, 1)

iv_b_SelectionMade = FALSE

SetFocus(dw_term)

End of Script
```

```
Script for: other  event
//Tries to control the tabbing that the user object seems to have
//difficulties with.

//Local Variables
CommandButton     lv_cb_which
DataWindow        lv_dw_which
GraphicObject     lv_go_WhichControl
String            lv_s_TextValue
String            lv_s_DataObject
//End Local Variables

IF (KeyDown(KeyTab!) AND KeyDown(KeyShift!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
// not sure how to explain the color setting ... trust me ... it needs to be there for now.
      st_1.textcolor = RGB(0, 0, 128)
```

```
      st_2.textcolor = RGB(0, 0, 128)
      IF (dw_course_section.enabled) THEN
         st_course_section_t.textcolor = RGB(0, 0, 128)
      ELSE
         st_course_section_t.textcolor = RGB(128, 128, 128)
      END IF
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&Scheduling ...") THEN
         IF (dw_course_section.enabled) THEN
            SetFocus(dw_course_section)
            Return
         ELSE
            SetFocus(dw_department)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Add Term/Department ...") THEN
         IF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(dw_course_section)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Reset") THEN
         SetFocus(cb_add)
         Return
      ELSEIF (lv_s_TextValue = "&Edit ...") THEN
```

```
         IF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&OK") THEN
         IF (cb_edit.enabled) THEN
            SetFocus(cb_edit)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_which.dataobject

      IF (lv_s_DataObject = "d_term_dddw") THEN
         SetFocus(cb_ok)
         Return
      ELSEIF (lv_s_DataObject = "d_department_dddw") THEN
         SetFocus(dw_term)
         Return
      ELSEIF (lv_s_DataObject = "d_course_section_dddw") THEN
         SetFocus(dw_department)
         Return
```

```
      ELSEIF (lv_s_Dataobject = "d_class_xref") THEN
         IF (dw_course_section.enabled) THEN
            SetFocus(dw_course_section)
            Return
         ELSE
            SetFocus(dw_department)
            Return
         END IF
      ELSE
         Return
      END IF

   case else
      Return
   END Choose
ELSEIF (KeyDown(KeyTab!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
// not sure how to explain the color setting ... trust me ... it needs to be there for now.
      st_1.textcolor = RGB(0, 0, 128)
      st_2.textcolor = RGB(0, 0, 128)
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&Scheduling ...") THEN
         SetFocus(cb_add)
         Return
      ELSEIF (lv_s_TextValue = "&Add Term/Department ...") THEN
         IF (cb_reset.enabled) THEN
```

```
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_edit.enabled) THEN
            SetFocus(cb_edit)
            Return
         ELSE
            SetFocus(cb_ok)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Reset") THEN
         IF (cb_edit.enabled) THEN
            SetFocus(cb_edit)
            Return
         ELSE
            SetFocus(cb_ok)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Edit ...") THEN
         SetFocus(cb_ok)
         Return
      ELSEIF (lv_s_TextValue = "&OK") THEN
         SetFocus(dw_term)
         Return
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_Which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_Which.dataobject

      IF (lv_s_DataObject = "d_term_dddw") THEN
         SetFocus(dw_department)
         Return
      ELSEIF (lv_s_DataObject = "d_department_dddw") THEN
```

User Object: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
         IF (dw_course_section.enabled) THEN
            SetFocus(dw_course_section)
            Return
         ELSEIF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSEIF (lv_s_DataObject = "d_course_section_dddw") THEN
         IF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSEIF (lv_s_DataObject = "d_class_xref") THEN
         IF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSE
         Return
      END IF
   case else
      Return
   END Choose
END IF

End of Script
```

User Object: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

Script for: getcontrolagain event

```
//Re-retrieves data into the datawindows after changes have been made in
//uo_class_maint.

//Local Variables
String      lv_s_FilterString
//End Local Variables

SetRedraw(dw_term, FALSE)
SetRedraw(dw_department, FALSE)
SetRedraw(dw_class_xref, FALSE)
SetRedraw(dw_course_section, FALSE)

Retrieve(dw_term)
Retrieve(dw_department)
Retrieve(dw_class_xref)
Retrieve(dw_course_section, gv_struct_parms.term, gv_struct_parms.department)

lv_s_FilterString =  "term = " + '"' + gv_struct_parms.term + '"' &
                          + " and department = " + '"' + gv_struct_parms.department + '"'

SetFilter(iv_dwc_CourseSection, lv_s_FilterString)
Filter(iv_dwc_CourseSection)

SetSort(dw_term, "term A")
SetSort(iv_dwc_term, "term A")
SetSort(dw_department, "department A")
SetSort(iv_dwc_department, "department A")
SetSort(dw_course_section, "course_num A, section_num A")
SetSort(iv_dwc_CourseSection, "course_num A, section_num A")

Sort(dw_term)
Sort(iv_dwc_term)
Sort(dw_department)
```

User Object: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
Sort(iv_dwc_department)
Sort(dw_course_section)
Sort(iv_dwc_CourseSection)

SetSort(dw_class_xref, "term A, department A, course_num A, section_num A")
Sort(dw_class_xref)

InsertRow(dw_term, 1)
InsertRow(dw_department, 1)
InsertRow(dw_course_section, 1)

ScrollToRow(dw_course_section, 1)
SetItem(dw_course_section, 1, "section_num", "")

st_course_section_t.textcolor = RGB(128, 128, 128)
dw_course_section.enabled = FALSE

SelectRow(dw_class_xref, 0, FALSE)

SetRedraw(dw_term, TRUE)
SetRedraw(dw_department, TRUE)
SetRedraw(dw_course_section, TRUE)
SetRedraw(dw_class_xref, TRUE)

//Reset gv_struct_parms
gv_struct_parms.term              =  ""
gv_struct_parms.department        =  ""
gv_struct_parms.course_number     =  0
gv_struct_parms.section_number    =  ""
gv_struct_parms.faculty_member    =  ""

cb_reset.enabled = FALSE
cb_scheduling.enabled   =  FALSE
cb_edit.enabled = FALSE

iv_b_SelectionMade = FALSE
```

```
SetFocus(dw_term)

End of Script


StaticText: st_course_section_t
X = 1697            Y = 9               Width = 714         Height = 73
TabOrder = 0        Visible = true      Text = "Course Number/Section Number"
TextColor = 8421504 BackColor = 12632256                    Alignment = left!
FillPattern = solid!


DataWindow: dw_course_section
X = 1697            Y = 85              Width = 1025        Height = 81
TabOrder = 20       Visible = true      DataObject = "d_course_section_dddw"
LiveScroll = true   BorderStyle = stylebox!

Script for: other  event
//Used to catch the WM_PAINT event in order to catch a change in the drop down datawindow

//Local Variables
Integer     lv_i_ClickedRow
Integer     lv_i_Row
Integer     lv_i_CourseNumber
String      lv_s_SectionNumber
String      lv_s_Term
String      lv_s_Department
String      lv_s_FindString
//End Local Variables

IF (KeyDown(keyDownArrow!)) THEN
   TriggerEvent(dw_course_section, "controldisplay")
   iv_b_UpDownArrowDone = TRUE
ELSEIF (KeyDown(keyUpArrow!)) THEN
```

```
   TriggerEvent(dw_course_section, "controldisplay")
   iv_b_UpDownArrowDone = TRUE
END IF

//IF Message.Number = 15 THEN windows has triggered WM_PAINT.  I'm using this method to catch when a non-
nique
//course_number is selected but it is a unique course/section number.

IF (Message.Number = 15) THEN
   TriggerEvent(dw_course_section, "dwclosedropdown")
END IF

End of Script



Script for: dwnkey  event
//DropDownDataWindows do strange things on tab ...

IF (KeyDown(keyTab!) AND KeyDown(keyShift!)) THEN
   SetFocus(dw_department)
   SetActionCode(dw_course_section, 1)
// not sure how to explain this ... but right now it needs to be there for tabbing control
   st_course_section_t.textcolor = RGB(255, 0, 0)
   iv_b_TabDone   =  TRUE
   Return
ELSEIF (KeyDown(keyTab!)) THEN
   SetFocus(cb_scheduling)
   SetActionCode(dw_course_section, 1)
// not sure how to explain this ... but right now it needs to be there for tabbing control
   st_course_section_t.textcolor = RGB(0, 255, 0)
   iv_b_TabDone   =  TRUE
   Return
END IF
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58


End of Script



Script for: dwclosedropdown  event
//When a course/section selection is changed, triggers the controldisplay event which
//selects the row in class_xref data window.

//Local Variables
Integer     lv_i_ClickedRow
//End Local Variables

//Currently, this event is triggered from the "other" event.  When and if this event
//occurs the dropdown closes, this script will be executed and the TriggerEvent in
//the "other" event could be removed

lv_i_ClickedRow = GetSelectedRow(iv_dwc_CourseSection, 0)

IF (lv_i_ClickedRow > 0) THEN
   TriggerEvent(dw_course_section, "controldisplay")
END IF

End of Script



Script for: controldisplay  event
//When an item is selected, it highlights the row in the class_xref data window

//Local Variables
Integer     lv_i_Row
Integer     lv_i_SelectedRow
Integer     lv_i_CourseNumber
String      lv_s_Term
String      lv_s_Department
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
String      lv_s_SectionNumber
String      lv_s_FindString
//End Local Variables

lv_i_SelectedRow = GetSelectedRow(iv_dwc_CourseSection, 0)

lv_s_Term = gv_struct_parms.term
lv_s_Department = gv_struct_parms.department
lv_i_CourseNumber = GetItemNumber(iv_dwc_CourseSection, lv_i_SelectedRow, "course_num")
lv_s_SectionNumber = Trim(GetItemString(iv_dwc_CourseSection, lv_i_SelectedRow, "section_num"))

SetItem(dw_course_section, 1, "section_num", lv_s_SectionNumber)

lv_s_FindString = "term = " + '"' + lv_s_Term + '"' &
                     + "and department = " + '"' + lv_s_Department + '"' &
                     + "and course_num = " + string(lv_i_CourseNumber) &
                     + "and section_num = " + '"' + lv_s_SectionNumber + '"'

lv_i_Row = dwFind(dw_class_xref, lv_s_FindString, 0, RowCount(dw_class_xref))

IF (lv_i_Row > 0) THEN
   SelectRow(dw_class_xref, 0, FALSE)
   SelectRow(dw_class_xref, lv_i_Row, TRUE)
   ScrollToRow(dw_class_xref, lv_i_Row)
END IF


End of Script
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

DataWindow: dw_department
X = 1006 Y = 85 Width = 494 Height = 93
TabOrder = 10 Visible = true Enabled = true DataObject = "d_department_dddw"
LiveScroll = true BorderStyle = stylebox!

Script for: itemchanged event

```
//Sets structure variables passed to other windows and user objects.
//Once a term and a department are selected, it fills the course/section
//drop down datawindow with information.

//Local Variables
Integer     lv_i_Row
Integer     lv_i_RowFound
String      lv_s_Term
String      lv_s_FilterString
String      lv_s_FindString
String      lv_s_Department
//End Local Variables

lv_s_Term = gv_struct_parms.term

lv_i_Row =  GetSelectedRow(iv_dwc_department, 0)

IF (lv_i_Row < 1) THEN
   Return
END IF

lv_s_Department   =  Trim(GetItemString(iv_dwc_department, lv_i_Row, "department"))
gv_struct_parms.department = lv_s_Department

cb_reset.enabled  =  TRUE

//Does the find string need to account for the fact that there is a term selected.
IF (NOT (IsNull(lv_s_Term) OR (lv_s_Term = ""))) THEN
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
SetRedraw(dw_course_section, FALSE)
SetRedraw(st_course_section_t, FALSE)

SelectRow(dw_class_xref, 0, FALSE)

Retrieve(dw_course_section, lv_s_Term, lv_s_Department)

lv_s_FilterString =  "term = " + '"' + lv_s_Term + '"' &
                          + " and department = " + '"' + lv_s_Department + '"'
SetFilter(iv_dwc_CourseSection, lv_s_FilterString)
Filter(iv_dwc_CourseSection)

SetSort(dw_course_section, "course_num A, section_num A")
SetSort(iv_dwc_CourseSection, "course_num A, section_num A")
Sort(dw_course_section)
Sort(iv_dwc_CourseSection)

lv_s_FindString = "term = " + '"' + lv_s_Term + '"' &
                        + "and department = " + '"' + lv_s_Department + '"'

lv_i_RowFound = dwFind(dw_class_xref, lv_s_FindString, 0, RowCount(dw_class_xref))

IF (lv_i_RowFound > 0) THEN
   SetRedraw(dw_class_xref, FALSE)
   SelectRow(dw_class_xref, lv_i_RowFound, TRUE)
   ScrollToRow(dw_class_xref, lv_i_RowFound)
   SetRedraw(dw_class_xref, TRUE)
   iv_b_SelectionMade = TRUE

   st_course_section_t.textcolor = RGB(0, 0, 128)
   dw_course_section.enabled  =  TRUE
ELSE
   InsertRow(dw_course_section, 0)
   st_course_section_t.textcolor = RGB(128, 128, 128)
   dw_course_section.enabled = FALSE
END IF
```

```
   SetRedraw(dw_course_section, TRUE)
   SetRedraw(st_course_section_t, TRUE)

   cb_scheduling.enabled   =  TRUE
   cb_edit.enabled = TRUE
END IF

End of Script
```

Script for: updateend event

```
//Called after a new department is added in the add_term_dept window.

//Local Variables
Integer     lv_i_InsertedRow
String      lv_s_Term
String      lv_s_Department
String      lv_s_FindString
//End Local Variables

SetRedraw(dw_class_xref, FALSE)
SetRedraw(dw_term, FALSE)
SetRedraw(dw_department, FALSE)

SelectRow(dw_class_xref, 0, FALSE)

lv_s_Department = gv_struct_parms.department

lv_s_FindString = "department = " + '"' + lv_s_Department + '"'

IF (dwFind(iv_dwc_department, lv_s_FindString, 1, RowCount(iv_dwc_department)) = 0) THEN
   lv_i_InsertedRow = InsertRow(iv_dwc_department, 0)
   SetItem(iv_dwc_department, lv_i_InsertedRow, "department", lv_s_Department)
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
   SetSort(dw_department, "department A")
   SetSort(iv_dwc_department, "department A")

   Sort(dw_department)
   Sort(iv_dwc_department)
END IF

InsertRow(dw_department, 1)

SetItem(dw_department, 1, "department", lv_s_Department)
ScrollToRow(dw_department, 1)

lv_s_Term = Trim(GetItemString(dw_term, 1, "term"))

IF ((IsNull(lv_s_Term)) OR (lv_s_Term = "")) THEN
   cb_edit.enabled = FALSE
   cb_scheduling.enabled   =  FALSE
ELSE
   cb_scheduling.enabled   =  TRUE
   cb_edit.enabled = TRUE
   cb_edit.default = TRUE
   cb_scheduling.default = FALSE
   cb_add.default = FALSE
   cb_reset.default = FALSE
   cb_ok.default = FALSE
END IF

SetRedraw(dw_class_xref, TRUE)
SetRedraw(dw_term, TRUE)
SetRedraw(dw_department, TRUE)

End of Script
```

Script for: dwnkey event

//User dddw datawindows do strange things on tabs so the following overrides tab and sets focus where it

```
IF (KeyDown(keyTab!) AND KeyDown(keyShift!)) THEN
   SetFocus(dw_term)
   SetActionCode(dw_department, 1)
   iv_b_TabDone    =  TRUE
// Don't know how to explain how this helps with tabbing but it does.
   st_2.textcolor = RGB(255, 0, 0)
   Return
ELSEIF (KeyDown(keyTab!)) THEN
   IF (dw_course_section.enabled) THEN
      SetFocus(dw_course_section)
   ELSE
      SetFocus(cb_scheduling)
   END IF
   SetActionCode(dw_department, 1)
   iv_b_TabDone    =  TRUE
// Don't know how to explain how this helps with tabbing but it does.
   st_2.textcolor = RGB(0, 255, 0)
   Return
END IF

End of Script



CommandButton: cb_reset
X = 1500            Y = 1325            Width = 289         Height = 109
TabOrder = 0        Visible = true      Text = "&Reset"

Script for: clicked  event
//Resets all information to the way it looked when the user object opened.

//Local Variables
Integer     lv_i_Row
//End Local Variables

SetRedraw(dw_class_xref, FALSE)
SetRedraw(dw_term, FALSE)
SetRedraw(dw_department, FALSE)
SetRedraw(dw_course_section, FALSE)
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
SelectRow(dw_class_xref, 0, FALSE)
ScrollToRow(dw_class_xref, 1)

lv_i_Row = dwFind(dw_term, "term = " + '"' + '"', 0, RowCount(dw_term))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_term, 1)
   ScrollToRow(dw_term, 1)
ELSE
   ScrollToRow(dw_term, lv_i_Row)
END IF

lv_i_Row = dwFind(dw_department, "department = " + '"' + '"', 0, RowCount(dw_department))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_department, 1)
   ScrollToRow(dw_department, 1)
ELSE
   ScrollToRow(dw_department, lv_i_Row)
END IF

InsertRow(dw_course_section, 1)
ScrollToRow(dw_course_section, 1)
dw_course_section.enabled = FALSE
st_course_section_t.textcolor = RGB(128, 128, 128)

SetFocus(dw_term)

SetRedraw(dw_class_xref, TRUE)
SetRedraw(dw_term, TRUE)
SetRedraw(dw_department, TRUE)
SetRedraw(dw_course_section, TRUE)

gv_struct_parms.term = ""
gv_struct_parms.department = ""

//Command Button Control
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

cb_reset.enabled = FALSE
cb_scheduling.enabled = FALSE
cb_edit.enabled = FALSE


End of Script


CommandButton: cb_ok
X = 2350            Y = 1325            Width = 289         Height = 109
TabOrder = 0        Visible = true      Enabled = true      Text = "&OK"

Script for: clicked  event
//Allows the user to exit the program.

//Local Variables

//End Local Variables

close (w_class_main_test)

End of Script


CommandButton: cb_edit
X = 1925            Y = 1325            Width = 289         Height = 109
TabOrder = 0        Visible = true      Text = "&Edit ..."

Script for: clicked  event
//Opens user object used for class maintenance.

//Local Variables
Integer          lv_i_SelectedRow
s_main_win_parms  s_parms
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

//End Local Variables

lv_i_SelectedRow = GetSelectedRow(dw_class_xref, 0)

s_parms.Department      =  gv_struct_parms.department
s_parms.Term            =  gv_struct_parms.term

IF (lv_i_SelectedRow > 1) THEN
   s_parms.Course_Number   =  GetItemNumber(dw_class_xref, lv_i_SelectedRow, "course_num")
   s_parms.Section_Number  =  Trim(GetItemString(dw_class_xref, lv_i_SelectedRow, "section_num"))
END IF

OpenWithParm(w_maint_main, s_parms)


End of Script



CommandButton: cb_add
X = 750             Y = 1325            Width = 613         Height = 109
TabOrder = 0        Visible = true      Enabled = true      Text = "&Add Term/Department ..."

Script for: clicked  event
//Opens add term department window, which is used to enter in a new term and/or department.
//Could be eliminated once the drop down datawindows become editable.

//Local Variables

//End Local Variables

Open(w_add_term_dept)

End of Script
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58


CommandButton: cb_scheduling
X = 142             Y = 1325            Width = 471         Height = 109
TabOrder = 0        Visible = true      Text = "&Scheduling ..."

Script for: clicked  event
//Opens the w_scheduling window which is used to create the actual schedule

OpenWithParm(w_scheduling, gv_struct_parms)

End of Script



DataWindow: dw_class_xref
X = 42              Y = 265             Width = 2725        Height = 989
TabOrder = 0        Visible = true      Enabled = true      DataObject = "d_class_xref"
VScrollBar = true   Border = true       LiveScroll = true   BorderStyle = stylebox!

Script for: clicked  event
//When a row is clicked, gets information from that row and sets them into global variables
//passed to other user objects and windows.  If the row was already selected, then the row
//is deselected.

//Local Variables
Integer     lv_i_SelectedRow
Integer     lv_i_ClickedRow
Integer     lv_i_FindRow
Integer     lv_i_CourseNumber
String      lv_s_Term
String      lv_s_Department
String      lv_s_SectionNumber
String      lv_s_FindTerm
String      lv_s_FindDepartment
String      lv_s_FindCourseSectionNum
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

String      lv_s_FilterString
//End Local Variables

lv_i_SelectedRow = GetSelectedRow(dw_class_xref, 0)
lv_i_ClickedRow = GetClickedRow(dw_class_xref)

SetRedraw(dw_class_xref, FALSE)

IF (lv_i_SelectedRow = lv_i_ClickedRow) THEN
   SelectRow(dw_class_xref, lv_i_ClickedRow, FALSE)
   gv_struct_parms.term = ""
   gv_struct_parms.department = ""
   cb_reset.enabled = FALSE
   cb_scheduling.enabled = FALSE
   cb_edit.enabled = FALSE
ELSE
   SelectRow(dw_class_xref, lv_i_SelectedRow, FALSE)
   SelectRow(dw_class_xref, lv_i_ClickedRow, TRUE)
   lv_s_Department      =  Trim(GetItemString(dw_class_xref, lv_i_ClickedRow, "department"))
   lv_s_Term            =  Trim(GetItemString(dw_class_xref, lv_i_ClickedRow, "term"))
   lv_i_CourseNumber    =  GetItemNumber(dw_class_xref, lv_i_ClickedRow, "course_num")
   lv_s_SectionNumber   =  Trim(GetItemString(dw_class_xref, lv_i_ClickedRow, "section_num"))

   gv_struct_parms.term = lv_s_Term
   gv_struct_parms.department = lv_s_Department
   gv_struct_parms.course_number = lv_i_CourseNumber
   gv_struct_parms.section_number = lv_s_SectionNumber

   lv_s_FindTerm = "term = " + '"' + lv_s_Term + '"'
   lv_i_FindRow = dwFind(dw_term, lv_s_FindTerm, 0, RowCount(dw_term))
   IF (lv_i_FindRow > 0) THEN
      ScrollToRow(dw_term, lv_i_FindRow)
   END IF

   lv_s_FindDepartment = "department = " + '"' + lv_s_Department + '"'
   lv_i_FindRow = dwFind(dw_department, lv_s_FindDepartment, 0, RowCount(dw_department))
```

```
   IF (lv_i_FindRow > 0) THEN
      ScrollToRow(dw_department, lv_i_FindRow)
   END IF

   st_course_section_t.textcolor = RGB(0, 0, 128)
   dw_course_section.enabled = TRUE
   Retrieve(dw_course_section, lv_s_Term, lv_s_Department)

   lv_s_FilterString = "term = " + '"' + lv_s_Term + '"' &
                           + "and department = " + '"' + lv_s_Department + '"'
   SetFilter(iv_dwc_CourseSection, lv_s_FilterString)
   Filter(iv_dwc_CourseSection)

   SetSort(dw_course_section, "course_num A, section_num A")
   SetSort(iv_dwc_CourseSection, "course_num A, section_num A")
   Sort(dw_course_section)
   Sort(iv_dwc_CourseSection)

   lv_s_FindCourseSectionNum = "course_num = " + string(lv_i_CourseNumber) &
                                  + "and section_num = " + '"' + lv_s_SectionNumber + '"'
   lv_i_FindRow = dwFind(dw_course_section, lv_s_FindCourseSectionNum, 0, RowCount(dw_course_section))

   IF (lv_i_FindRow > 0) THEN
      ScrollToRow(dw_course_section, lv_i_FindRow)
   END IF

   cb_reset.enabled = TRUE
   cb_scheduling.enabled = TRUE
   cb_edit.enabled = TRUE

   SetFocus(cb_edit)
END IF

SetRedraw(dw_class_xref, TRUE)
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

iv_b_SelectionMade = TRUE

End of Script



Script for: doubleclicked  event
//Gets information for the doubleclicked row and sets them into global variables.
//Triggers event "clicked" of command button edit (which opens class maintenance datawindow)

//Local Variables
Integer     lv_i_Row
//End Local Variables

lv_i_Row = GetSelectedRow(dw_class_xref, 0)

IF (lv_i_Row > 0) THEN
   gv_struct_parms.term = Trim(GetItemString(dw_class_xref, lv_i_Row, "term"))
   gv_struct_parms.department = Trim(GetItemString(dw_class_xref, lv_i_Row, "department"))
   gv_struct_parms.course_number = GetItemNumber(dw_class_xref, lv_i_Row, "course_num")
   gv_struct_parms.section_number = Trim(GetItemString(dw_class_xref, lv_i_Row, "section_num"))

   cb_edit.enabled = TRUE
   cb_scheduling.enabled = TRUE

   TriggerEvent(cb_edit, "clicked")
END IF

End of Script
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

DataWindow: dw_term
X = 275 Y = 85 Width = 449 Height = 101
TabOrder = 0 Visible = true Enabled = true DataObject = "d_term_dddw"
LiveScroll = true BorderStyle = stylebox!

Script for: editchanged event

```
//This script will only work if I can get the dddw editable
//As the user types in information, datawindow scrolls to the closest item being typed.

//Local Variables
Integer     lv_i_Row
Integer     lv_i_NumRows
String      lv_s_Term
String      lv_s_Department
String      lv_s_FindString
//End Local Variables

lv_s_Term         =  Trim(GetText(dw_term))
lv_s_Department   =  gv_struct_parms.department

IF (IsNull(lv_s_Department) OR (lv_s_Department = "")) THEN
   lv_s_FindString   =  "term = " + '"' + lv_s_Term + '"'
   lv_i_NumRows      =  RowCount(dw_class_xref)

   lv_i_Row =  dwFind(dw_class_xref, lv_s_FindString, 0, lv_i_NumRows)

   IF (lv_i_Row > 0) THEN
      SelectRow(dw_class_xref, 0, FALSE)
      SelectRow(dw_class_xref, lv_i_Row, TRUE)
      ScrollToRow(dw_class_xref, lv_i_Row)
   ELSEIF (lv_i_Row = 0) THEN
      //No match found, will highlight row after which term would be displayed
      lv_s_FindString   =  "term > " + '"' + lv_s_Term + '"'
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
      lv_i_Row =  dwFind(dw_class_xref, lv_s_FindString, 0, lv_i_NumRows)

      IF (lv_i_Row > 0) THEN
         SelectRow(dw_class_xref, 0, FALSE)
         SelectRow(dw_class_xref, lv_i_Row, TRUE)
         ScrollToRow(dw_class_xref, lv_i_Row)
      ELSEIF (lv_i_Row = 0) THEN
         //Select last row
         SelectRow(dw_class_xref, 0, FALSE)
         SelectRow(dw_class_xref, lv_i_NumRows, TRUE)
         ScrollToRow(dw_class_xref, lv_i_NumRows)
      END IF
   END IF
ELSE
   lv_s_FindString    =  "term = " + '"' + lv_s_Term + '"' &
                           + "and department = " + '"' + lv_s_Department + '"'
   lv_i_NumRows       =  RowCount(dw_class_xref)

   lv_i_Row =  dwFind(dw_class_xref, lv_s_FindString, 0, lv_i_NumRows)

   IF (lv_i_Row > 0) THEN
      SelectRow(dw_class_xref, 0, FALSE)
      SelectRow(dw_class_xref, lv_i_Row, TRUE)
      ScrollToRow(dw_class_xref, lv_i_Row)
   ELSEIF (lv_i_Row = 0) THEN
      //No match found, will highlight row after which term would be displayed
      lv_s_FindString    =  "term > " + '"' + lv_s_Term + '"' &
                              + "and department = " + '"' + lv_s_Department + '"'

      lv_i_Row =  dwFind(dw_class_xref, lv_s_FindString, 0, lv_i_NumRows)

      IF (lv_i_Row > 0) THEN
         SelectRow(dw_class_xref, 0, FALSE)
         SelectRow(dw_class_xref, lv_i_Row, TRUE)
         ScrollToRow(dw_class_xref, lv_i_Row)
      ELSEIF (lv_i_Row = 0) THEN
```

Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:50:58

```
         //Select last row
         SelectRow(dw_class_xref, 0, FALSE)
         SelectRow(dw_class_xref, lv_i_NumRows, TRUE)
         ScrollToRow(dw_class_xref, lv_i_NumRows)
      END IF
   END IF
END IF

End of Script
```

Script for: itemchanged event

```
//Sets structure variables passed to other windows and user objects.
//Once a term and a department are selected, it fills the course/section
//drop down datawindow with information.

//Local Variables
Integer     lv_i_Row
Integer     lv_i_RowFound
String      lv_s_Term
String      lv_s_FilterString
String      lv_s_Department
//End Local Variables

lv_s_Department = gv_struct_parms.department

lv_i_Row =  GetSelectedRow(iv_dwc_term, 0)

IF (lv_i_Row < 1) THEN
   Return
END IF

lv_s_Term   =  Trim(GetItemString(iv_dwc_term, lv_i_Row, "term"))
gv_struct_parms.term = lv_s_Term
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

cb_reset.enabled  =  TRUE

//Does the filter string need to account for the fact that there is a department selected.
IF (NOT (IsNull(lv_s_Department) OR (lv_s_Department = ""))) THEN
   SelectRow(dw_class_xref, 0, FALSE)

   lv_s_FilterString = "term = " + '"' + lv_s_Term + '"' &
                           + "and department = " + '"' + lv_s_Department + '"'

   lv_i_RowFound = dwFind(dw_class_xref, lv_s_FilterString, 0, RowCount(dw_class_xref))

   IF (lv_i_RowFound > 0) THEN
      SetRedraw(dw_class_xref, FALSE)
      SelectRow(dw_class_xref, lv_i_RowFound, TRUE)
      ScrollToRow(dw_class_xref, lv_i_RowFound)
      SetRedraw(dw_class_xref, TRUE)
      iv_b_SelectionMade = TRUE

      st_course_section_t.textcolor = RGB(0, 0, 128)
      dw_course_section.enabled  =  TRUE

      Retrieve(dw_course_section, lv_s_Term, lv_s_Department)

      lv_s_FilterString =  "term = " + '"' + lv_s_Term + '"' &
                              + " and department = " + '"' + lv_s_Department + '"'

      SetFilter(iv_dwc_CourseSection, lv_s_FilterString)
      Filter(iv_dwc_CourseSection)

      SetSort(dw_course_section, "course_num A, section_num A")
      SetSort(iv_dwc_CourseSection, "course_num A, section_num A")
      Sort(dw_course_section)
      Sort(iv_dwc_CourseSection)

   END IF
   cb_scheduling.enabled = TRUE
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

   cb_edit.enabled   =  TRUE
END IF

End of Script


Script for: updateend  event
//Called after a new term is added in the add_term_dept window.

//Local Variables
Integer     lv_i_InsertedRow
String      lv_s_Term
String      lv_s_Department
String      lv_s_FindString
//End Local Variables

SetRedraw(dw_class_xref, FALSE)
SetRedraw(dw_term, FALSE)
SetRedraw(dw_department, FALSE)

SelectRow(dw_class_xref, 0, FALSE)

lv_s_Term = gv_struct_parms.term

lv_s_FindString = "term = " + '"' + lv_s_Term + '"'

IF (dwFind(iv_dwc_term, lv_s_FindString, 1, RowCount(iv_dwc_term)) = 0) THEN
   lv_i_InsertedRow = InsertRow(iv_dwc_term, 0)
   SetItem(iv_dwc_term, lv_i_InsertedRow, "term", lv_s_Term)

   SetSort(dw_term, "term A")
   SetSort(iv_dwc_term, "term A")

   Sort(dw_term)
   Sort(iv_dwc_term)
```

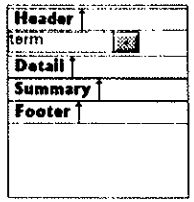
```
END IF

InsertRow(dw_term, 1)

SetItem(dw_term, 1, "term", lv_s_Term)
ScrollToRow(dw_term, 1)

lv_s_Department = Trim(GetItemString(dw_department, 1, "department"))

IF ((IsNull(lv_s_Department)) OR (lv_s_Department = "")) THEN
   cb_scheduling.enabled = FALSE
   cb_edit.enabled = FALSE
ELSE
   cb_scheduling.enabled = TRUE
   cb_edit.enabled = TRUE
   cb_edit.default = TRUE
   cb_scheduling.default = FALSE
   cb_add.default = FALSE
   cb_reset.default = FALSE
   cb_ok.default = FALSE
END IF

SetRedraw(dw_class_xref, TRUE)
SetRedraw(dw_term, TRUE)
SetRedraw(dw_department, TRUE)

End of Script



Script for: dwnkey  event
//drop down datawindows do strange things on tabs so the following overrides tab and sets focus where it
hould be.

IF (KeyDown(KeyTab!) AND KeyDown(KeyShift!)) THEN
   SetFocus(cb_ok)
```

```
Window: uo_class_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:50:58

   SetActionCode(dw_term, 1)
// Used to control tabbing ... not sure why it works
   st_1.textcolor = RGB(255, 0, 0)
   iv_b_TabDone = TRUE
Return
ELSEIF (KeyDown(KeyTab!)) THEN
   SetFocus(dw_department)
   SetActionCode(dw_term, 1)
// Used to control tabbing ... not sure why it works
   st_1.textcolor = RGB(0, 255, 0)
   iv_b_TabDone = TRUE
   Return
END IF

End of Script


StaticText: st_2
X = 1006            Y = 13              Width = 330         Height = 69
TabOrder = 0        Visible = true      Text = "Department" TextColor = 8388608
BackColor = 12632256                    Alignment = left!   FillPattern = solid!


StaticText: st_1
X = 275             Y = 13              Width = 243         Height = 69
TabOrder = 0        Visible = true      Text = "Term"       TextColor = 8388608
BackColor = 12632256                    Alignment = left!   FillPattern = solid!
```

DataWindow: d_term_dddw

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:14:30

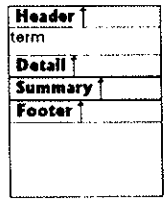


```
DataWindow: d_term_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:14:30

Retrieve: PBSELECT(TABLE(NAME="term_xref" ) COLUMN(NAME="term_xref.term"))
Arguments: None
Update Table: term_xref
Filter: None
Sort: None
Sparse: term
Column: term
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: DropDownDataWindow
      Name:    d_term_list
      Data Column:    term
      Display Column:    term
```

DataWindow: d_term_list

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:13:19



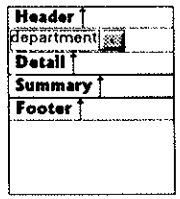
DataWindow: d_term_list
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:13:19

Retrieve: PBSELECT(TABLE(NAME="term_xref") COLUMN(NAME="term_xref.term"))
Arguments: None
Update Table: term_xref
Filter: None
Sort: None
Sparse: None
Column: term
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 10

DataWindow: d_department_dddw

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:43:23

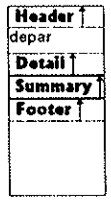


```
DataWindow: d_department_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:43:23

Retrieve: PBSELECT(TABLE(NAME="department_xref" ) COLUMN(NAME="department_xref.department"))
Arguments: None
Update Table: department_xref
Filter: None
Sort: None
Sparse: None
Column: department
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: DropDownDataWindow
      Name:    d_department_list
      Data Column:    department
      Display Column:    department
```

DataWindow: d_department_list

Library: e:\thesis\appl\schedule.pbl

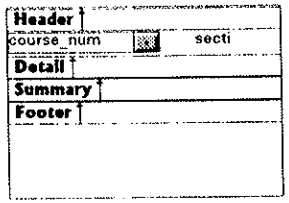
Date: 5/2/95 Time: 17:43:06



DataWindow: d_department_list
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:43:06

Retrieve: PBSELECT(TABLE(NAME="department_xref") COLUMN(NAME="department_xref.department"))
Arguments: None
Update Table: department_xref
Filter: None
Sort: None
Sparse: None
Column: department
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 4

DataWindow: d_course_section_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:43:54



```
DataWindow: d_course_section_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:43:54

Retrieve: PBSELECT(TABLE(NAME="class_information" ) COLUMN(NAME="class_information.course_num")
 COLUMN(NAME="class_information.section_num") COLUMN(NAME="class_information.term")
 COLUMN(NAME="class_information.department")WHERE( EXP1 ="~"class_information~".~"term~"" OP ="=" EXP2
 =":arg_s_term" LOGIC ="and" ) WHERE( EXP1 ="~"class_information~".~"department~"" OP ="=" EXP2
 =":arg_s_department" ) ) ARG(NAME = "arg_s_term" TYPE = string) ARG(NAME = "arg_s_department" TYPE =
 string)
Arguments: arg_s_term arg_s_department
Update Table: class_information
Filter: None
Sort: None
Sparse: None
Column: course_num
    Updateable:  No
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: DropDownDataWindow
      Name:    d_course_section_list
      Data Column:    course_num
      Display Column:    course_num
Column: section_num
```

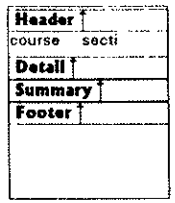
DataWindow: d_course_section_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:43:54

Key: Yes
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 3

DataWindow: d_course_section_list

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:43:35

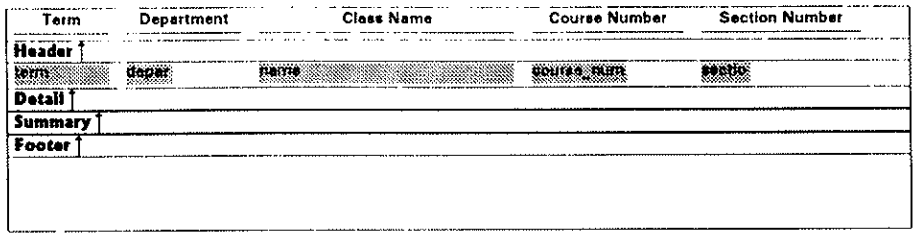


```
Update Table: class_information
Filter: None
Sort: None
Sparse: None
Column: section_num
    Updateable:  No
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 3
Column: course_num
    Updateable:  No
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
```

DataWindow: d_class_xref

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:46:32



```
DataWindow: d_class_xref
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:46:32

Retrieve: PBSELECT(TABLE(NAME="class_information" ) COLUMN(NAME="class_information.term")
 COLUMN(NAME="class_information.department") COLUMN(NAME="class_information.name")
 COLUMN(NAME="class_information.course_num") COLUMN(NAME="class_information.section_num"))
Arguments: None
Update Table: class_information
Filter: None
Sort: None
Sparse: None
Column: term
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 10
Column: department
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
```

DataWindow: d_class_xref
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:46:32

Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 4
Column: name
Updateable: No
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: course_num
Updateable: No
Key: Yes
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit

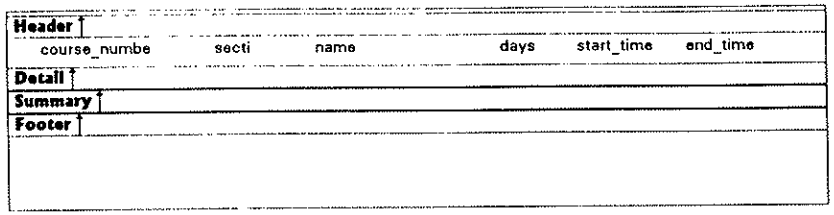
DataWindow: d_class_xref
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:46:32

Column: section_num
    Updateable: No
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0

DataWindow: d_class_info_update

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:46:49



DataWindow: d_class_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:46:49

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: days
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: start_time
    Format: "[time]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: end_time

Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 30
Initial Value: None
Edit Style: Edit
Edit limit: 0

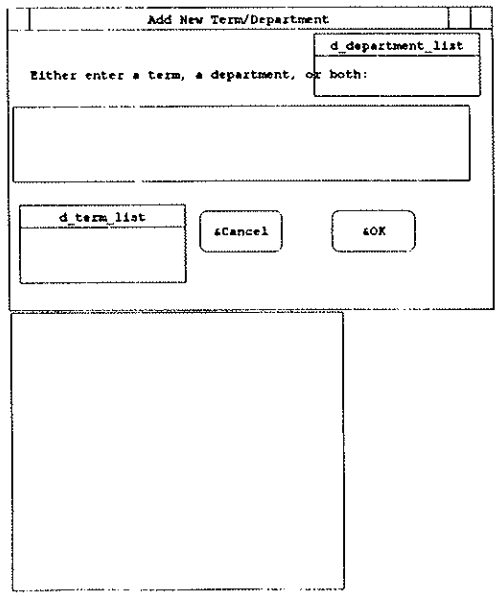
Column: course_number
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: section_number
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

DataWindow: d_class_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:46:49

Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Window: w_add_term_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:18:01



```
Visible = true      Enabled = true      TitleBar = true     Title = "Add New Term/Department"
ControlMenu = true  MinBox = true       MaxBox = true       Resizable = true
WindowType = main!  WindowState = normal!                   BackColor = 12632256

Script for: open  event
//Connects the hidden datawindow with the database.  Inserts a blank row into the add datawindow.

//Local Variables

//End Local Variables

SetTransObject(dw_term, SQLCA)
SetTransObject(dw_department, SQLCA)

dwShareData(uo_class_main.dw_term, dw_term)
dwShareData(uo_class_main.dw_department, dw_department)


InsertRow(dw_add, 1)
ScrollToRow(dw_add, 1)


End of Script



Graph: gr_2
X = 5               Y = 737             Width = 988         Height = 721
TabOrder = 0        Visible = true      TextColor = 0       BackColor = 12632256
TextColor = 6316128 Spacing = 100       Elevation = 20      Rotation = -20
Perspective = 2     Title = "(None)"    Border = true       BorderStyle = stylebox!
GraphType = colgraph!                   Legend = atbottom!


DataWindow: dw_department
X = 910             Y = 13              Width = 494         Height = 165
TabOrder = 0        Enabled = true      DataObject = "d_department_list"
TitleBar = true     Title = "Department List"               Border = true
LiveScroll = true   BorderStyle = stylebox!
```

```
Window: w_add_term_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:18:01


DataWindow: dw_term
X = 33              Y = 457             Width = 494         Height = 205
TabOrder = 0        Enabled = true      DataObject = "d_term_list"
TitleBar = true     Title = "Term List" Border = true       LiveScroll = true
BorderStyle = stylebox!


StaticText: st_1
X = 55              Y = 73              Width = 1171        Height = 93
TabOrder = 0        Visible = true      Text = "Either enter a term, a department, or both:"
TextColor = 33554432                    BackColor = 12632256
Alignment = left!   FillPattern = solid!


CommandButton: cb_ok
X = 961             Y = 473             Width = 247         Height = 109
TabOrder = 30       Visible = true      Enabled = true      Text = "&OK"

Script for: clicked  event
//Closes the window w_add_term_dept with saving the new term and/or new department back to the database.

//Local Variables
Boolean     lv_b_TermOkay
Boolean     lv_b_DepartmentOkay
Integer     lv_i_FoundRow
Integer     lv_i_InsertedRow
String      lv_s_Term
String      lv_s_Department
String      lv_s_FilterString
String      lv_s_OldTerm
String      lv_s_OldDepartment
//End Local Variables

AcceptText(dw_add)
```

Window: w_add_term_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:18:01

```
lv_s_Term         =  Trim(GetItemString(dw_add, 1, "term"))
lv_s_Department   =  Trim(GetItemString(dw_add, 1, "department"))

IF (IsNull(lv_s_Term) OR (lv_s_Term = "")) THEN
   IF (IsNull(lv_s_Department) OR (lv_s_Department = "")) THEN
      TriggerEvent(cb_cancel, "clicked")
      Return
   ELSE
      lv_s_FilterString = "department = " + '"' + lv_s_Department + '"'
      lv_i_FoundRow = dwFind(dw_department, lv_s_FilterString, 0, RowCount(dw_department))
      IF (lv_i_FoundRow = 0) THEN
         lv_i_InsertedRow = InsertRow(dw_department, 0)
         SetItem(dw_department, lv_i_InsertedRow, "department", lv_s_Department)
         lv_s_OldDepartment = Trim(GetItemString(dw_department, 1, "department"))
         IF ((NOT IsNull(lv_s_OldDepartment)) OR (NOT (lv_s_OldDepartment = ""))) THEN
            SetItem(dw_department, 1, "department", "")
         END IF
         gv_struct_parms.department = lv_s_Department
      ELSE
MessageBox("Information", "This department already exists.  No additions will be made.", Informat
ion!, OK!)
         TriggerEvent(cb_cancel, "clicked")
         Return
      END IF
   END IF
ELSEIF (IsNull(lv_s_Department) OR (lv_s_Department = "")) THEN
   lv_s_FilterString = "term = " + '"' + lv_s_Term + '"'
   lv_i_FoundRow = dwFind(dw_term, lv_s_FilterString, 0, RowCount(dw_term))
   IF (lv_i_FoundRow = 0) THEN
      lv_i_InsertedRow = InsertRow(dw_term, 0)
      SetItem(dw_term, lv_i_InsertedRow, "term", lv_s_Term)
      lv_s_OldTerm = Trim(GetItemString(dw_term, 1, "term"))
      IF ((NOT IsNull(lv_s_OldTerm)) OR (NOT (lv_s_OldTerm = ""))) THEN
         SetItem(dw_term, 1, "term", "")
      END IF
```

```
      gv_struct_parms.term = lv_s_Term
   ELSE
MessageBox("Information", "This term already exists.  No additions will be made", Information!, OK!)

      TriggerEvent(cb_cancel, "clicked")
      Return
   END IF
ELSE
   lv_s_FilterString = "term = " + '"' + lv_s_Term + '"'
   lv_i_FoundRow = dwFind(dw_term, lv_s_FilterString, 0, RowCount(dw_term))
   IF (lv_i_FoundRow = 0) THEN
      lv_i_InsertedRow = InsertRow(dw_term, 0)
      SetItem(dw_term, lv_i_InsertedRow, "term", lv_s_Term)
      gv_struct_parms.term = lv_s_Term
      lv_b_TermOkay = TRUE
   END IF

   lv_s_FilterString = "department = " + '"' + lv_s_Department + '"'
   lv_i_FoundRow = dwFind(dw_department, lv_s_FilterString, 0, RowCount(dw_department))
   IF (lv_i_FoundRow = 0) THEN
      lv_i_InsertedRow = InsertRow(dw_department, 0)
      SetItem(dw_department, lv_i_InsertedRow, "department", lv_s_Department)
      gv_struct_parms.department = lv_s_Department
      lv_b_DepartmentOkay = TRUE
   END IF

   IF (NOT lv_b_TermOkay) THEN
      IF (NOT lv_b_DepartmentOkay) THEN
         MessageBox("Information", "Both the department and term already exist.", Information!, OK!)
         TriggerEvent(cb_cancel, "clicked")
         Return
      ELSE
MessageBox("Information", "This term already exists but the department will be added.", Informati
on!, OK!)
      END IF
   ELSE
```

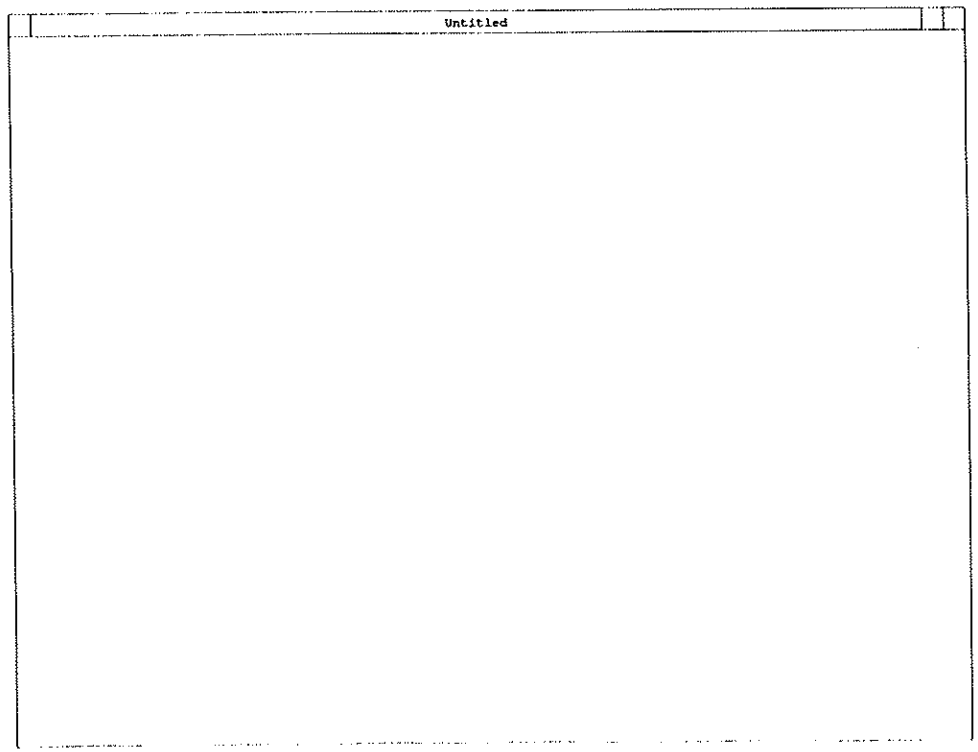
```
      IF (NOT lv_b_DepartmentOkay) THEN
MessageBox("Information", "This department already exists but the term will be added.", Informati
on!, OK!)
      END IF
   END IF

END IF

//Update database with any changes
IF ((ModifiedCount(dw_term) > 0) OR (DeletedCount(dw_term) > 0)) THEN
   DeleteRow(dw_term, 1)
   IF (Update(dw_term) = 1) THEN
      COMMIT;
   ELSE
      ROLLBACK;
   END IF
END IF

IF ((ModifiedCount(dw_department) > 0) OR (DeletedCount(dw_department) > 0)) THEN
   DeleteRow(dw_department, 1)
   IF ((Update(dw_department) = 1)) THEN
      COMMIT;
   ELSE
      ROLLBACK;
   END IF
END IF

dwShareDataOff(dw_term)
dwShareDataOff(dw_department)

close(w_add_term_dept)

End of Script
```

```
CommandButton: cb_cancel
X = 567             Y = 473             Width = 247         Height = 109
TabOrder = 20       Visible = true      Enabled = true      Text = "&Cancel"
Default = true

Script for: clicked  event
//Closes the window w_add_term_dept without saving the new term and/or new department.

dwShareDataOff(dw_term)
dwShareDataOff(dw_department)

close(w_add_term_dept)

End of Script


DataWindow: dw_add
X = 14              Y = 201             Width = 1358        Height = 197
TabOrder = 10       Visible = true      Enabled = true      DataObject = "d_add_dept_term"
BorderStyle = stylebox!
```

DataWindow: d_add_dept_term
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 18:01:04

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: term
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 10
Column: department
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 4

Window: w_maint_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:24:28



```
Window: w_maint_main
X = 919              Y = 593              Width = 2844         Height = 1905
Visible = true       Enabled = true       TitleBar = true      Title = "Untitled"
ControlMenu = true   MinBox = true        MaxBox = true        Resizable = true
WindowType = main!   WindowState = normal!                     BackColor = 12632256

Script for: open  event
//Opens either user object uo_class_maint or uo_prof_maint depending on whether w_class_main_test
//was displaying class information or faculty member information.

//Local Variables
String               lv_s_Title
s_main_win_parms     s_parms
//End Local Variables

s_parms = Message.PowerObjectParm

IF (gv_s_MainUoType = "class") THEN
   lv_s_Title = "Class Maintenance - " + s_parms.department + " " + s_parms.term
   This.Title = lv_s_Title
   OpenUserObjectWithParm(uo_class_maint, s_parms, 13, 13)
ELSEIF (gv_s_MainUoType = "prof") THEN
   lv_s_Title = "Faculty Member Maintenance - " + s_parms.department
   This.Title = lv_s_Title
   OpenUserObjectWithParm(uo_prof_maint, s_parms, 13, 13)
ELSE
   MessageBox("Information", "Oops!", Information!, Ok!)
END IF

End of Script
```

```
CommandButton  iv_cb_CurrentDefault

Integer     iv_i_UpdateRow
Integer     iv_i_Row

s_main_win_parms  s_MainParms

s_class_info_parms   s_InfoParms

End of Instance Variables


Script for: constructor  event
//Retrieves any needed information from the database.

//Local Variables
String      lv_s_FindString
Integer     lv_i_FoundRow
//End Local Variables

SetPointer(Hourglass!)

s_MainParms = Message.PowerObjectParm

SetTransObject(dw_class_info_xref, SQLCA)

Retrieve(dw_class_info_xref, s_MainParms.term, s_MainParms.department)

SetSort(dw_class_info_xref, "course_num A, section_num A")
Sort(dw_class_info_xref)

IF (NOT s_MainParms.course_number = 0) THEN
   lv_s_FindString = "course_num = " + String(s_MainParms.course_number) &
                        + " and section_num = " + '"' + s_MainParms.section_number + '"'
   lv_i_FoundRow = dwFind(dw_class_info_xref, lv_s_FindString, 1, RowCount(dw_class_info_xref))
```

```
   SelectRow(dw_class_info_xref, 0, FALSE)
   SelectRow(dw_class_info_xref, lv_i_FoundRow, TRUE)

   iv_i_Row = lv_i_FoundRow

   dw_class_info_add.enabled  =  FALSE
   dw_class_info_update.enabled  =  FALSE

   cb_add.enabled = FALSE
   cb_add.default = FALSE
   cb_select.enabled = TRUE
   cb_select.default = TRUE
   iv_cb_CurrentDefault =  cb_select
   cb_delete.enabled = TRUE
   cb_delete.default =  FALSE
   cb_reset_maint.enabled = TRUE
   cb_reset_maint.default  =  FALSE
   cb_update.enabled =  FALSE
   cb_update.default =  FALSE
   cb_cancel.enabled =  FALSE
   cb_cancel.default =  FALSE
   cb_more.enabled   =  FALSE
   cb_more.default   =  FALSE

   SetFocus(cb_select)
ELSE
   iv_cb_CurrentDefault =  cb_add
   SetFocus(dw_class_info_add)
END IF

InsertRow(dw_class_info_add, 1)
InsertRow(dw_class_info_update, 1)

iv_b_ChangesMade = FALSE
s_InfoParms.first_time = TRUE
```

End of Script

Script for: other event
//Tries to control tabbing within the user object.

```
//Local Variables
CommandButton     lv_cb_which
DataWindow        lv_dw_which
GraphicObject     lv_go_WhichControl
String            lv_s_TextValue
String            lv_s_DataObject
//End Local Variables

IF (KeyDown(KeyTab!) AND KeyDown(KeyShift!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&More ...") THEN
         IF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
```

```
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Add") THEN
         IF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Select") THEN
         IF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
```

```
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Delete") THEN
         IF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Update") THEN
```

```
         IF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Reset") THEN
         IF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
```

```
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Cancel") THEN
         IF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
```

```
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&OK") THEN
         IF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
```

```
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_which.dataobject

      IF (lv_s_DataObject = "d_class_info_add") THEN
         Return
      ELSEIF (lv_s_DataObject = "d_class_info_update") THEN
         Return
      ELSEIF (lv_s_DataObject = "d_class_info") THEN
         IF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_class_info_add.enabled) THEN
            SetFocus(dw_class_info_add)
            SetColumn(dw_class_info_add, "end_time")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
```

```
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "end_time")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case else
      Return
   END Choose
ELSEIF (KeyDown(KeyTab!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&More ...") THEN
         IF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
```

```
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Add") THEN
         IF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
```

```
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Select") THEN
         IF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Delete") THEN
         IF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
```

User Object: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

```
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&Update") THEN
      IF (cb_reset_maint.enabled) THEN
         SetFocus(cb_reset_maint)
         Return
      ELSEIF (cb_cancel.enabled) THEN
         SetFocus(cb_cancel)
         Return
      ELSEIF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&Reset") THEN
      IF (cb_cancel.enabled) THEN
         SetFocus(cb_cancel)
         Return
      ELSEIF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&Cancel") THEN
      IF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&OK") THEN
      IF (dw_class_info_add.enabled) THEN
         SetFocus(dw_class_info_add)
```

```
            SetColumn(dw_class_info_add, "course_number")
            Return
         ELSEIF (dw_class_info_update.enabled) THEN
            SetFocus(dw_class_info_update)
            SetColumn(dw_class_info_update, "days")
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset_maint.enabled) THEN
            SetFocus(cb_reset_maint)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_Which = lv_go_WhichControl
```

```
lv_s_DataObject = lv_dw_Which.dataobject

IF (lv_s_DataObject = "d_class_info_add") THEN
   Return
ELSEIF (lv_s_DataObject = "d_class_info_update") THEN
   Return
ELSEIF (lv_s_DataObject = "d_class_info") THEN
   IF (cb_add.enabled) THEN
      SetFocus(cb_add)
      Return
   ELSEIF (cb_select.enabled) THEN
      SetFocus(cb_select)
      Return
   ELSEIF (cb_delete.enabled) THEN
      SetFocus(cb_delete)
      Return
   ELSEIF (cb_update.enabled) THEN
      SetFocus(cb_update)
      Return
   ELSEIF (cb_reset_maint.enabled) THEN
      SetFocus(cb_reset_maint)
      Return
   ELSEIF (cb_cancel.enabled) THEN
      SetFocus(cb_cancel)
      Return
   ELSEIF (cb_ok.enabled) THEN
      SetFocus(cb_ok)
      Return
   ELSE
      Return
   END IF
ELSE
   Return
END IF
```

User Object: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

```
   case else
      Return
   END Choose
END IF

End of Script
```

DataWindow: dw_class_info_update
X = 37 Y = 225 Width = 2369 Height = 129
TabOrder = 10 Enabled = true DataObject = "d_class_info_update"
LiveScroll = true BorderStyle = stylebox!

```
Script for: editchanged  event
//After a change has been made, allows the update button to be enabled so that changes can be
//moved to the class_info_xref datawindow and be saved (if desired).

//Local Variables

//End Local Variables

//Indicate that changes were made
iv_b_ChangesMade = TRUE

//Command Button Control
cb_update.enabled = TRUE

End of Script


Script for: dwnkey  event
//Tries to control tabbing.

//Local Variables
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

String      lv_s_CurrentColumn
//End Local Variables

lv_s_CurrentColumn = GetColumnName(dw_class_info_update)

IF (KeyDown(keyTab!) AND KeyDown(keyShift!)) THEN
   IF (lv_s_CurrentColumn = "days") THEN
      iv_b_TabDone    =  TRUE
      SetFocus(cb_ok)
      Return
   ELSE
      Return
   END IF
ELSEIF (KeyDown(keyTab!) AND (lv_s_CurrentColumn = "end_time")) THEN
   iv_b_TabDone    =  TRUE
   cb_update.enabled     =  TRUE
   cb_reset_maint.enabled      =  TRUE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_more.default       =  TRUE
   iv_cb_CurrentDefault =  cb_more
   SetFocus(cb_more)
   Return
END IF

End of Script



StaticText: st_7
X = 92              Y = 441             Width = 563         Height = 73
TabOrder = 0        Visible = true      Text = "Current Term/Department"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!
```

Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

```
StaticText: st_6
X = 2081            Y = 113             Width = 220          Height = 73
TabOrder = 0        Visible = true      Text = "End Time"    TextColor = 8388608
BackColor = 12632256                    Alignment = left!    FillPattern = solid!

StaticText: st_5
X = 1751            Y = 113             Width = 247          Height = 73
TabOrder = 0        Visible = true      Text = "Start Time"  TextColor = 8388608
BackColor = 12632256                    Alignment = left!    FillPattern = solid!

StaticText: st_4
X = 1532            Y = 113             Width = 124          Height = 73
TabOrder = 0        Visible = true      Text = "Days"        TextColor = 8388608
BackColor = 12632256                    Alignment = left!    FillPattern = solid!

StaticText: st_3
X = 1125            Y = 113             Width = 142          Height = 73
TabOrder = 0        Visible = true      Text = "Name"        TextColor = 8388608
BackColor = 12632256                    Alignment = left!    FillPattern = solid!

StaticText: st_2
X = 531             Y = 113             Width = 357          Height = 73
TabOrder = 0        Visible = true      Text = "Section Number"
TextColor = 8388608 BackColor = 12632256                     Alignment = left!
FillPattern = solid!
```

```
StaticText: st_1
X = 129             Y = 113             Width = 343         Height = 73
TabOrder = 0        Visible = true      Text = "Course Number"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!


CommandButton: cb_more
X = 2423            Y = 157             Width = 247         Height = 109
TabOrder = 30       Visible = true      Text = "&More ..."

Script for: clicked  event
//Opens another window used to get more class (and lab) information

//Local Variables

//End Local Variables

IF (dw_class_info_add.visible) THEN
   s_InfoParms.add_mode = TRUE
ELSE
   s_InfoParms.add_mode = FALSE
   cb_update.enabled = TRUE
END IF

OpenWithParm(w_more_class_info, s_InfoParms)

End of Script



Script for: uponreturn  event
//Updates information when the user returns from the window used to obtain more class (and lab) informati
n.
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45


//Local Variables

//End Local Variables

s_InfoParms = Message.PowerObjectParm

IF (dw_class_info_add.enabled) THEN
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add
   SetFocus(cb_add)
ELSEIF (dw_class_info_update.enabled) THEN
   iv_cb_CurrentDefault.default  =  FALSE
   cb_update.default =  TRUE
   iv_cb_CurrentDefault =  cb_update
   SetFocus(cb_update)
END IF

iv_b_ChangesMade = TRUE

End of Script



Script for: lbuttondown  event
//Used to track which button has default.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_more

End of Script
```

Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

CommandButton: cb_ok
X = 2387 Y = 1601 Width = 247 Height = 109
TabOrder = 110 Visible = true Enabled = true Text = "&OK"

Script for: clicked event

```
//Returns back to the class information user object.
//But first updates the database with any changes made.

//Local Variables

//End Local Variables

//Update database with current changes if any were made.
IF ((ModifiedCount(dw_class_info_xref) > 0) OR (DeletedCount(dw_class_info_xref) > 0)) THEN
   IF (Update(dw_class_info_xref) = 1) THEN
      COMMIT;
   ELSE
      ROLLBACK;
   END IF
END IF

close(w_maint_main)

TriggerEvent(uo_class_main, "getcontrolagain")
```

End of Script

Script for: lbuttondown event

```
//Used to track which button has default.

//Local Variables
```

```
Window: uo_ciass_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_ok

End of Script


CommandButton: cb_cancel
X = 2058            Y = 1601            Width = 247         Height = 109
TabOrder = 100      Visible = true      Text = "&Cancel"

Script for: clicked  event
//Returns back to the class information user object.
//Any changes will NOT be saved.

close(w_maint_main)

End of Script


Script for: lbuttondown  event
//Used to track which button has default.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_cancel

End of Script
```

Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

CommandButton: cb_reset_maint
X = 1495 Y = 1601 Width = 247 Height = 109
TabOrder = 90 Visible = true Text = "&Reset"

```
Script for: clicked  event
//Removes any information in the class_info_add datawindow or class_info_update datawindow
//and unselects any selected row in dw_class_info_xref.

//Local Variables

//End Local Variables

IF (cb_add.enabled) THEN
   Reset(dw_class_info_add)
   InsertRow(dw_class_info_add, 0)
   ScrollToRow(dw_class_info_add, 1)
   SetFocus(dw_class_info_add)
   SetColumn(dw_class_info_add, "course_number")

   //Reset the structure values
   s_InfoParms.first_time = TRUE
   s_InfoParms.location = ""
   s_InfoParms.max_credits = 0
   s_InfoParms.min_credits = 0
   s_InfoParms.building = ""
   s_InfoParms.room = ""
   s_InfoParms.class_limit = 0
   s_InfoParms.flags = ""
   s_InfoParms.lab = ""
   s_InfoParms.lab_days = ""
   s_InfoParms.lab_start_time = 00:00:00
   s_InfoParms.lab_end_time = 00:00:00
   s_InfoParms.lab_location = ""
   s_InfoParms.lab_max_credits = 0
```

```
   s_InfoParms.lab_min_credits = 0
   s_InfoParms.lab_building = ""
   s_InfoParms.lab_room = ""

   cb_more.enabled   =  FALSE
   cb_reset_maint.enabled  =  FALSE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add

   Return
END IF

SetRedraw(dw_class_info_xref, FALSE)
SetRedraw(dw_class_info_add, FALSE)
SetRedraw(dw_class_info_update, FALSE)

SelectRow(dw_class_info_xref, 0, FALSE)

Reset(dw_class_info_update)
InsertRow(dw_class_info_update, 0)
ScrollToRow(dw_class_info_update, 1)

dw_class_info_update.visible  =  FALSE
dw_class_info_add.visible     =  TRUE

dw_class_info_add.enabled     =  TRUE
dw_class_info_update.enabled  =  FALSE
dw_class_info_xref.enabled    =  TRUE

//Reset the structure values
s_InfoParms.first_time = TRUE
s_InfoParms.location = ""
s_InfoParms.max_credits = 0
s_InfoParms.min_credits = 0
s_InfoParms.building = ""
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

s_InfoParms.room = ""
s_InfoParms.class_limit = 0
s_InfoParms.flags = ""
s_InfoParms.lab = ""
s_InfoParms.lab_days = ""
s_InfoParms.lab_start_time = 00:00:00
s_InfoParms.lab_end_time = 00:00:00
s_InfoParms.lab_location = ""
s_InfoParms.lab_max_credits = 0
s_InfoParms.lab_min_credits = 0
s_InfoParms.lab_building = ""
s_InfoParms.lab_room = ""

iv_b_ChangesMade = FALSE

SetRedraw(dw_class_info_update, TRUE)
SetRedraw(dw_class_info_add, TRUE)
SetRedraw(dw_class_info_xref, TRUE)

//Command Button Control
cb_reset_maint.enabled     =  FALSE
cb_add.enabled       =  TRUE
iv_cb_CurrentDefault.default  =  FALSE
cb_add.default       =  TRUE
iv_cb_CurrentDefault =  cb_add
cb_select.enabled    =  FALSE
cb_delete.enabled    =  FALSE
cb_update.enabled    =  FALSE
cb_more.enabled      =  FALSE

SetFocus(dw_class_info_add)

End of Script
```

```
//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_reset_maint

End of Script



CommandButton: cb_update
X = 1166            Y = 1601            Width = 247         Height = 109
TabOrder = 80       Visible = true      Text = "&Update"

Script for: clicked  event
//Updates the changed information from dw_class_info_update (and more class/lab information window) in
//the class_info_xref datawindow.

//Local Variables
Integer     lv_i_CourseNumber
String      lv_s_SectionNumber
String      lv_s_Name
String      lv_s_Days
Time        lv_t_StartTime
Time        lv_t_EndTime
//End Local Variables

SetPointer(Hourglass!)

AcceptText(dw_class_info_update)

lv_i_CourseNumber    =  GetItemNumber(dw_class_info_update, 1, "course_number")
lv_s_SectionNumber   =  Trim(GetItemString(dw_class_info_update, 1, "section_number"))
lv_s_Name            =  Trim(GetItemString(dw_class_info_update, 1, "name"))
lv_s_Days            =  Trim(GetItemString(dw_class_info_update, 1, "days"))
lv_t_StartTime       =  GetItemTime(dw_class_info_update, 1, "start_time")
lv_t_EndTime         =  GetItemTime(dw_class_info_update, 1, "end_time")
```

Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

```
SetItem(dw_class_info_xref, iv_i_UpdateRow, "course_num", lv_i_CourseNumber)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "section_num", lv_s_SectionNumber)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "name", lv_s_Name)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "start_time", lv_t_StartTime)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "end_time", lv_t_EndTime)

SetItem(dw_class_info_xref, iv_i_UpdateRow, "location", s_InfoParms.location)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "max_credits", s_InfoParms.max_credits)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "min_credits", s_InfoParms.min_credits)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "building", s_InfoParms.building)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "room", s_InfoParms.room)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "class_limit", s_InfoParms.class_limit)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "flags", s_InfoParms.flags)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab", s_InfoParms.lab)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_days", s_InfoParms.lab_days)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_location", s_InfoParms.lab_location)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_max_credits", s_InfoParms.lab_max_credits)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_min_credits", s_InfoParms.lab_min_credits)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_start_time", s_InfoParms.lab_start_time)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_end_time", s_InfoParms.lab_end_time)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_building", s_InfoParms.lab_building)
SetItem(dw_class_info_xref, iv_i_UpdateRow, "lab_room", s_InfoParms.lab_room)

//Reset the structure values
s_InfoParms.first_time = TRUE
s_InfoParms.location = ""
s_InfoParms.max_credits = 0
s_InfoParms.min_credits = 0
s_InfoParms.building = ""
s_InfoParms.room = ""
s_InfoParms.class_limit = 0
s_InfoParms.flags = ""
s_InfoParms.lab = ""
s_InfoParms.lab_days = ""
s_InfoParms.lab_start_time = 00:00:00
s_InfoParms.lab_end_time = 00:00:00
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

s_InfoParms.lab_location = ""
s_InfoParms.lab_max_credits = 0
s_InfoParms.lab_min_credits = 0
s_InfoParms.lab_building = ""
s_InfoParms.lab_room = ""

SetRedraw(dw_class_info_xref, FALSE)
SetRedraw(dw_class_info_add, FALSE)
SetRedraw(dw_class_info_update, FALSE)

SelectRow(dw_class_info_xref, 0, FALSE)

Reset(dw_class_info_update)
InsertRow(dw_class_info_update, 0)
ScrollToRow(dw_class_info_update, 1)

dw_class_info_update.visible  =  FALSE
dw_class_info_add.visible     =  TRUE

dw_class_info_update.enabled  =  FALSE
dw_class_info_add.enabled     =  TRUE

SetFocus(dw_class_info_add)

//Command Button Control
cb_more.enabled    =  FALSE
cb_add.enabled     =  TRUE
iv_cb_CurrentDefault.default  =  FALSE
cb_add.default     =  TRUE
iv_cb_CurrentDefault =  cb_add
cb_select.enabled =  FALSE
cb_delete.enabled =  FALSE
cb_update.enabled =  FALSE
cb_reset_maint.enabled  =  FALSE
cb_cancel.enabled =  TRUE
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

iv_b_ChangesMade = FALSE

SetRedraw(dw_class_info_xref, TRUE)
SetRedraw(dw_class_info_add, TRUE)
SetRedraw(dw_class_info_update, TRUE)

End of Script


Script for: lbuttondown  event
//Used to track which button has default.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_update

End of Script


CommandButton: cb_delete
X = 837             Y = 1601            Width = 247         Height = 109
TabOrder = 70       Visible = true      Text = "&Delete"

Script for: clicked  event
//Deletes the current selected row in dw_class_info_xref after verifying the user wants to delete
//the information.

//Local Variables
Integer     lv_i_Row
//End Local Variables
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

//Capture the row number to delete.
lv_i_Row = GetSelectedRow(dw_class_info_xref, 0)

//Ensure a row has been selected prior to deletion.
IF (lv_i_Row = 0) THEN
   MessageBox("Information", "A row must be selected before deleting.", Information!, OK!)
   Return
END IF

IF (MessageBox("Information", "Delete current row?", Question!, YesNo!, 2) = 1) THEN
   DeleteRow(dw_class_info_xref, lv_i_Row)

   dw_class_info_add.enabled     =  TRUE
   dw_class_info_update.enabled  =  FALSE

   //Command Button Control
   cb_add.enabled    =  TRUE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add
   cb_select.enabled =  FALSE
   cb_delete.enabled =  FALSE
   cb_update.enabled =  FALSE
   cb_reset_maint.enabled  =  FALSE
   cb_cancel.enabled =  TRUE

   SetFocus(dw_class_info_add)
END IF

End of Script


Script for: lbuttondown  event
//Used to track which button has default.
```

```
//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_delete

End of Script


CommandButton: cb_add
X = 119             Y = 1601            Width = 247         Height = 109
TabOrder = 50       Visible = true      Enabled = true      Text = "&Add"
Default = true

Script for: clicked  event
//Takes data entered from the add datawindow, validates the information, and sets the information
//into the class_xref datawindow.

//Local Variables
Integer     lv_i_InsertedRow
Integer     lv_i_CourseNumber
String      lv_s_SectionNumber
String      lv_s_Name
String      lv_s_Days
String      lv_s_FindString
Time        lv_t_StartTime
Time        lv_t_EndTime

Integer     lv_i_MaxCredits
//End Local Variables

SetPointer(Hourglass!)

AcceptText(dw_class_info_add)
```

```
   SetRedraw(dw_class_info_xref, TRUE)
   SetFocus(dw_class_info_add)
   Return
END IF

lv_i_InsertedRow = InsertRow(dw_class_info_xref, 0)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "term", s_MainParms.term)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "department", s_MainParms.department)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "course_num", lv_i_CourseNumber)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "section_num", lv_s_SectionNumber)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "name", lv_s_Name)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "days", lv_s_Days)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "start_time", lv_t_StartTime)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "end_time", lv_t_EndTime)

lv_i_MaxCredits = s_InfoParms.max_credits

SetItem(dw_class_info_xref, lv_i_InsertedRow, "location", s_InfoParms.location)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "max_credits", s_InfoParms.max_credits)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "min_credits", s_InfoParms.min_credits)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "building", s_InfoParms.building)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "room", s_InfoParms.room)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "class_limit", s_InfoParms.class_limit)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "flags", s_InfoParms.flags)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab", s_InfoParms.lab)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_days", s_InfoParms.lab_days)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_start_time", s_InfoParms.lab_start_time)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_end_time", s_InfoParms.lab_end_time)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_location", s_InfoParms.lab_location)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_max_credits", s_InfoParms.lab_max_credits)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_min_credits", s_InfoParms.lab_min_credits)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_building", s_InfoParms.lab_building)
SetItem(dw_class_info_xref, lv_i_InsertedRow, "lab_room", s_InfoParms.lab_room)

SelectRow(dw_class_info_xref, 0, FALSE)
SetSort(dw_class_info_xref, "course_num A, section_num A")
```

```
Sort(dw_class_info_xref)

//Don't think this will work ... but what the heck ... Did it?? What was it supposed to accomplish?
lv_i_InsertedRow = GetSelectedRow(dw_class_info_xref, 0)
ScrollToRow(dw_class_info_xref, lv_i_InsertedRow)

SetRedraw(dw_class_info_add, FALSE)

Reset(dw_class_info_add)
InsertRow(dw_class_info_add, 0)
ScrollToRow(dw_class_info_add, 1)

SetFocus(dw_class_info_add)

SetRedraw(dw_class_info_xref, TRUE)
SetRedraw(dw_class_info_add, TRUE)

//Reset the structure values
s_InfoParms.first_time = TRUE
s_InfoParms.location = ""
s_InfoParms.max_credits = 0
s_InfoParms.min_credits = 0
s_InfoParms.building = ""
s_InfoParms.room = ""
s_InfoParms.class_limit = 0
s_InfoParms.flags = ""
s_InfoParms.lab = ""
s_InfoParms.lab_days = ""
s_InfoParms.lab_start_time = 00:00:00
s_InfoParms.lab_end_time = 00:00:00
s_InfoParms.lab_location = ""
s_InfoParms.lab_max_credits = 0
s_InfoParms.lab_min_credits = 0
s_InfoParms.lab_building = ""
s_InfoParms.lab_room = ""
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

iv_b_ChangesMade = FALSE

//Command Button Control
cb_reset_maint.enabled  =  FALSE
cb_more.enabled    =  FALSE
cb_cancel.enabled =  TRUE


End of Script


Script for: lbuttondown  event
//Used to track which button has default.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_add

End of Script


CommandButton: cb_select
X = 449             Y = 1601            Width = 307         Height = 109
TabOrder = 60       Visible = true      Text = "&Select"

Script for: clicked  event
//Triggers event "doubledclicked" for dw_class_info_xref

//Local Variables
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45


//End Local Variables

TriggerEvent(dw_class_info_xref, "DoubleClicked")

End of Script



Script for: lbuttondown  event
//Used to track which button has default.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_select

End of Script



DataWindow: dw_class_info_add
X = 37              Y = 225             Width = 2327        Height = 129
TabOrder = 20       Visible = true      Enabled = true      DataObject = "d_class_info_add"
LiveScroll = true   BorderStyle = stylebox!

Script for: editchanged  event
//Once data has been entered into the datawindow, buttons are enabled to get more information and
//reset the information.

//Local Variables

//End Local Variables
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

cb_more.enabled    =  TRUE      .
cb_reset_maint.enabled  =  TRUE

SelectRow(dw_class_info_xref, 0, FALSE)

cb_select.enabled =  FALSE
cb_delete.enabled =  FALSE

End of Script



Script for: dwnkey  event
//Used to control tabbing within the datawindow.

//Local Variables
String      lv_s_CurrentColumn
Boolean     lv_defaults[8]
//End Local Variables

lv_s_CurrentColumn = GetColumnName(dw_class_info_add)

IF (KeyDown(keyTab!) AND KeyDown(keyShift!)) THEN
   IF (lv_s_CurrentColumn = "course_number") THEN
      iv_b_TabDone    =  TRUE
      SetFocus(cb_ok)
      Return
   ELSE
      Return
   END IF
ELSEIF (KeyDown(keyTab!) AND (lv_s_CurrentColumn = "end_time")) THEN
   iv_b_TabDone    =  TRUE
   IF (cb_more.enabled) THEN
      iv_cb_CurrentDefault.default  =  FALSE
      cb_more.default    =  TRUE
      iv_cb_CurrentDefault = cb_more
```

```
      SetFocus(cb_more)
      Return
   ELSEIF (cb_add.enabled) THEN
      SetFocus(cb_add)
      Return
   ELSEIF (cb_select.enabled) THEN
      SetFocus(cb_select)
      Return
   ELSEIF (cb_delete.enabled) THEN
      SetFocus(cb_delete)
      Return
   ELSEIF (cb_update.enabled) THEN
      SetFocus(cb_update)
      Return
   ELSEIF (cb_reset_maint.enabled) THEN
      SetFocus(cb_reset_maint)
      Return
   ELSEIF (cb_cancel.enabled) THEN
      SetFocus(cb_cancel)
      Return
   ELSEIF (cb_ok.enabled) THEN
      SetFocus(cb_ok)
      Return
   ELSE
      Return
   END IF
ELSEIF (KeyDown(keyEnter!)) THEN
   Return
END IF

End of Script
```

Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:37:45

DataWindow: dw_class_info_xref
X = 33 Y = 473 Width = 2721 Height = 1053
TabOrder = 40 Visible = true Enabled = true DataObject = "d_class_info"
VScrollBar = true Border = true LiveScroll = true BorderStyle = stylebox!

Script for: clicked event

```
//Highlights the clicked row and changes which buttons are enabled and disabled.

//Local Variables
Integer     lv_i_SelectedRow
//End Local Variables

iv_i_Row = GetClickedRow(dw_class_info_xref)

IF (iv_i_Row < 1) THEN
   Return
END IF

lv_i_SelectedRow = GetSelectedRow(dw_class_info_xref, 0)
IF (iv_i_Row = lv_i_SelectedRow) THEN
   SelectRow(dw_class_info_xref, 0, FALSE)

   cb_delete.enabled =  FALSE
   cb_add.enabled    =  TRUE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add
   cb_reset_maint.enabled  =  FALSE
   cb_update.enabled =  FALSE
   cb_select.enabled =  FALSE

   IF (iv_b_ChangesMade) THEN
      IF (MessageBox("Changes Made", "Do you wish to save changes?", Question!, YesNo!) = 1) THEN
         TriggerEvent(cb_update, "clicked")
```

```
      ELSE
         iv_b_ChangesMade = FALSE
      END IF
   END IF

   SetRedraw(dw_class_info_add, FALSE)
   SetRedraw(dw_class_info_update, FALSE)

   Reset(dw_class_info_update)

   InsertRow(dw_class_info_update, 0)
   ScrollToRow(dw_class_info_update, 1)

   dw_class_info_add.visible     =  TRUE
   dw_class_info_update.visible  =  FALSE
   dw_class_info_add.enabled     =  TRUE
   dw_class_info_update.enabled  =  FALSE

   SetRedraw(dw_class_info_add, TRUE)
   SetRedraw(dw_class_info_update, TRUE)

   SetFocus(dw_class_info_add)
ELSE
   SelectRow(dw_class_info_xref, 0, FALSE)
   SelectRow(dw_class_info_xref, iv_i_Row, TRUE)

   IF (cb_add.enabled) THEN
      SetRedraw(dw_class_info_add, FALSE)
      dw_class_info_add.enabled  =  FALSE

      Reset(dw_class_info_add)
      InsertRow(dw_class_info_add, 0)
      ScrollToRow(dw_class_info_add, 1)

      SetRedraw(dw_class_info_add, TRUE)
   END IF
```

```
   //Command Button Control
   cb_delete.enabled = TRUE
   iv_cb_CurrentDefault.default = FALSE
   cb_select.default = TRUE
   iv_cb_CurrentDefault = cb_select
   cb_add.enabled = FALSE
   cb_reset_maint.enabled = TRUE
   cb_select.enabled = TRUE
END IF

End of Script



Script for: doubleclicked  event
//Gets the information from the doubleclicked row, sets it into class_info_update datawindow
//and structure passed to more class/lab information window.

//Local Variables
Integer     lv_i_CourseNumber
String      lv_s_SectionNumber
String      lv_s_Name
String      lv_s_Days
Time        lv_t_StartTime
Time        lv_t_EndTime
//End Local Variables

IF (iv_i_Row < 1) THEN
   SetFocus(dw_class_info_add)
   Return
END IF

//Should be taken care of by clicked event ....
IF (iv_b_ChangesMade) THEN
   IF (MessageBox("Changes Made", "Do you wish to save changes?", Question!, YesNo!) = 1) THEN
```

```
      TriggerEvent(cb_update, "clicked")
   ELSE
      iv_b_ChangesMade = FALSE
   END IF
END IF

SetRedraw(dw_class_info_update, FALSE)
SetRedraw(dw_class_info_add, FALSE)

dw_class_info_update.enabled  =  TRUE
dw_class_info_add.enabled     =  FALSE

dw_class_info_update.visible  =  TRUE
dw_class_info_add.visible     =  FALSE

Reset(dw_class_info_add)
InsertRow(dw_class_info_add, 0)
ScrollToRow(dw_class_info_add, 1)

Reset(dw_class_info_update)
InsertRow(dw_class_info_update, 0)
ScrollToRow(dw_class_info_update, 1)

iv_i_UpdateRow = iv_i_Row

lv_i_CourseNumber    =  GetItemNumber(dw_class_info_xref, iv_i_UpdateRow, "course_num")
lv_s_SectionNumber   =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "section_num"))
lv_s_Name            =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "name"))
lv_s_Days            =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "days"))
lv_t_StartTime       =  GetItemTime(dw_class_info_xref, iv_i_UpdateRow, "start_time")
lv_t_EndTime         =  GetItemTime(dw_class_info_xref, iv_i_UpdateRow, "end_time")

SetItem(dw_class_info_update, 1, "course_number", lv_i_CourseNumber)
SetItem(dw_class_info_update, 1, "section_number", lv_s_SectionNumber)
SetItem(dw_class_info_update, 1, "name", lv_s_Name)
SetItem(dw_class_info_update, 1, "days", lv_s_Days)
```

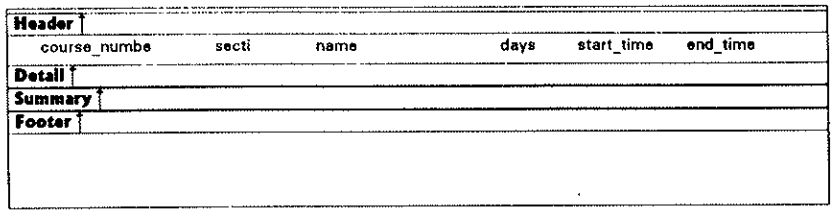
```
SetItem(dw_class_info_update, 1, "start_time", lv_t_StartTime)
SetItem(dw_class_info_update, 1, "end_time", lv_t_EndTime)

s_InfoParms.add_mode          =  FALSE
s_InfoParms.first_time        =  FALSE
s_InfoParms.location          =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "location"))
s_InfoParms.max_credits       =  GetItemNumber(dw_class_info_xref, iv_i_UpdateRow, "max_credits")
s_InfoParms.min_credits       =  GetItemNumber(dw_class_info_xref, iv_i_UpdateRow, "min_credits")
s_InfoParms.building          =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "building"))
s_InfoParms.room              =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "room"))
s_InfoParms.class_limit       =  GetItemNumber(dw_class_info_xref, iv_i_UpdateRow, "class_limit")
s_InfoParms.flags             =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "flags"))
s_InfoParms.lab               =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "lab"))
s_InfoParms.lab_days          =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "lab_days"))
s_InfoParms.lab_start_time    =  GetItemTime(dw_class_info_xref, iv_i_UpdateRow, "lab_start_time")
s_InfoParms.lab_end_time      =  GetItemTime(dw_class_info_xref, iv_i_UpdateRow, "lab_end_time")
s_InfoParms.lab_location      =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "lab_location"))
s_InfoParms.lab_max_credits   =  GetItemNumber(dw_class_info_xref, iv_i_UpdateRow, "lab_max_credits")
s_InfoParms.lab_min_credits   =  GetItemNumber(dw_class_info_xref, iv_i_UpdateRow, "lab_min_credits")
s_InfoParms.lab_building      =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "lab_building"))
s_InfoParms.lab_room          =  Trim(GetItemString(dw_class_info_xref, iv_i_UpdateRow, "lab_room"))

SelectRow(dw_class_info_xref, 0, FALSE)
SelectRow(dw_class_info_xref, iv_i_UpdateRow, TRUE)

//Command Button Control
cb_more.enabled   =  TRUE
cb_add.enabled    =  FALSE
cb_delete.enabled =  FALSE
cb_update.enabled =  FALSE
cb_reset_maint.enabled  =  TRUE
iv_cb_CurrentDefault.default  =  FALSE
cb_reset_maint.default     =  TRUE
iv_cb_CurrentDefault =  cb_reset_maint
cb_select.enabled =  FALSE
```

```
Window: uo_class_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:37:45

iv_b_ChangesMade = FALSE

SetFocus(dw_class_info_update)
SetColumn(dw_class_info_update, "days")

SetRedraw(dw_class_info_add, TRUE)
SetRedraw(dw_class_info_update, TRUE)

End of Script


Line: ln_1
BeginX = 33          BeginY = 361         EndX = 2743          EndY = 361
Visible = true       LineColor = 33554432                      LineStyle = continuous!
LineThickness = 5


Line: ln_2
BeginX = 33          BeginY = 65          EndX = 2743          EndY = 65
Visible = true       LineColor = 33554432                      LineStyle = continuous!
LineThickness = 5


Line: ln_3
BeginX = 33          BeginY = 69          EndX = 33            EndY = 365
Visible = true       LineColor = 33554432                      LineStyle = continuous!
LineThickness = 5


Line: ln_4
BeginX = 2739        BeginY = 69          EndX = 2739          EndY = 365
Visible = true       LineColor = 33554432                      LineStyle = continuous!
LineThickness = 5
```

DataWindow: d_class_info_update

Library: e:\thesis\appl\schedule.pbl

Date: 5/3/95 Time: 23:24:17



```
DataWindow: d_class_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/3/95   Time: 23:24:17

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: days
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: start_time
    Format: "[time]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: end_time
```

DataWindow: d_class_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/3/95 Time: 23:24:17

Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 30
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: course_number
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: section_number
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

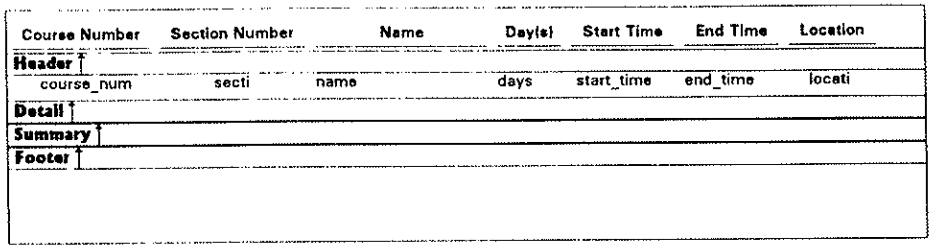
DataWindow: d_class_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/3/95 Time: 23:24:17

Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

DataWindow: d_class_info

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:55:46



DataWindow: d_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:55:46

Retrieve: PBSELECT(TABLE(NAME="class_information") COLUMN(NAME="class_information.term") COLUMN(NAME="cl
Arguments: arg_s_term arg_s_dept
Update Table: class_information
Filter: None
Sort: None
Sparse: None
Column: course_num
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_num
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0

DataWindow: d_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:55:46

    Edit Style: Edit
    Edit limit: 3
Column: name
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 20
Column: days
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 6
Column: start_time

DataWindow: d_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:55:46

Key: No
Format: "[time]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: end_time
Updateable: Yes
Key: No
Format: "[time]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: location
Updateable: Yes
Key: No
Format: "[general]"
Border style: None

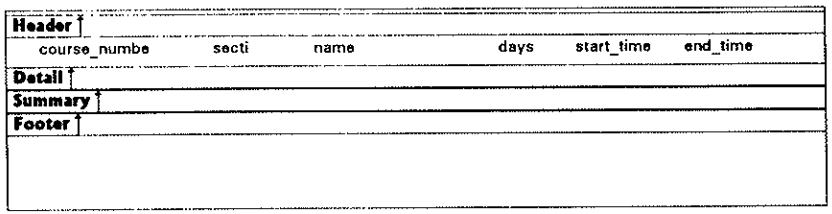
DataWindow: d_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:55:46

Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 3

DataWindow: d_class_info_add

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:53:56



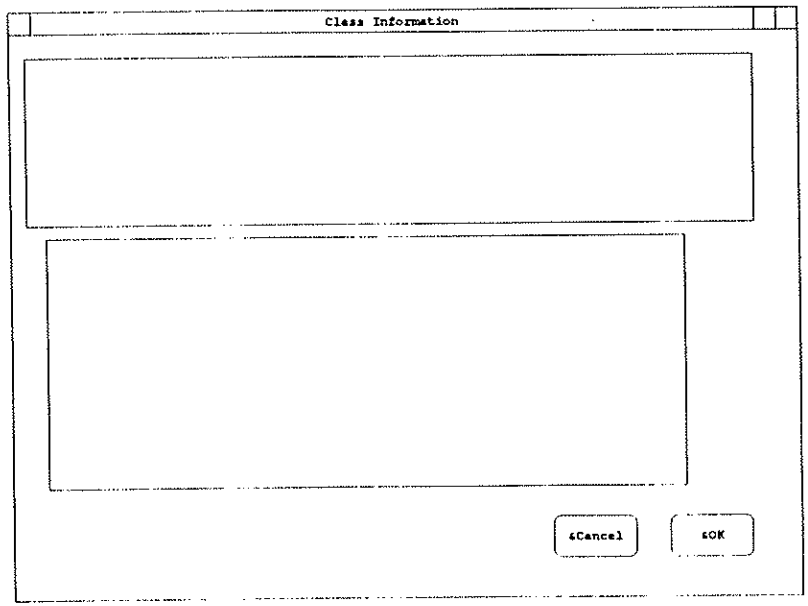
```
DataWindow: d_class_info_add
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:53:56

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: course_number
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_number
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: name
```

```
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 30
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: days
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 40
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: start_time
    Format: "[time]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 50
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
```

DataWindow: d_class_info_add
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:53:56

Format: "[time]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 60
Initial Value: None
Edit Style: Edit
Edit limit: 0

Window: w_more_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:26:05



Window: w_more_class_info

X = 1079	Y = 489	Width = 2346	Height = 1529
Visible = true	Enabled = true	TitleBar = true	Title = "Class Information"
ControlMenu = true	MinBox = true	MaxBox = true	Resizable = true
WindowType = main!	WindowState = normal!		BackColor = 12632256

```
Instance Variables
s_class_info_parms      s_parms

End of Instance Variables


Script for: open  event
//Adds a blank row into the two datawindows.  If in update mode, sets data into the datawindows
//from the information in the structures.  If in add mode, the lab datawindow is hidden.

//Local Variables
Boolean     lv_b_AddMode
Boolean     lv_b_FirstTime
String      lv_s_Lab
//End Local Variables

s_parms = Message.PowerObjectParm

Reset(dw_class_info)
InsertRow(dw_class_info, 0)
ScrollToRow(dw_class_info, 1)

Reset(dw_lab_info)
InsertRow(dw_lab_info, 0)
ScrollToRow(dw_lab_info, 1)

lv_b_AddMode   =  s_parms.add_mode
lv_b_FirstTime =  s_parms.first_time

IF ((NOT lv_b_AddMode) OR (NOT lv_b_FirstTime)) THEN

   //Set the class info dw
   SetItem(dw_class_info, 1, "location", s_parms.location)
   SetItem(dw_class_info, 1, "max_credits", s_parms.max_credits)
```

Window: w_more_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:26:05

```
   SetItem(dw_class_info, 1, "min_credits", s_parms.min_credits)
   SetItem(dw_class_info, 1, "building", s_parms.building)
   SetItem(dw_class_info, 1, "room", s_parms.room)
   SetItem(dw_class_info, 1, "class_limit", s_parms.class_limit)
   SetItem(dw_class_info, 1, "flags", s_parms.flags)
   SetItem(dw_class_info, 1, "lab", s_parms.lab)

   //Check to see if the lab info needs to be filled.
   lv_s_Lab = Trim(s_parms.lab)

   IF ((lv_s_Lab = "Y") OR (lv_s_Lab = "y")) THEN
      dw_lab_info.visible = TRUE
      dw_lab_info.enabled = TRUE

      SetItem(dw_lab_info, 1, "lab_days", s_parms.lab_days)
      SetItem(dw_lab_info, 1, "lab_start_time", s_parms.lab_start_time)
      SetItem(dw_lab_info, 1, "lab_end_time", s_parms.lab_end_time)
      SetItem(dw_lab_info, 1, "lab_location", s_parms.lab_location)
      SetItem(dw_lab_info, 1, "lab_max_credits", s_parms.lab_max_credits)
      SetItem(dw_lab_info, 1, "lab_min_credits", s_parms.lab_min_credits)
      SetItem(dw_lab_info, 1, "lab_building", s_parms.lab_building)
      SetItem(dw_lab_info, 1, "lab_room", s_parms.lab_room)
   END IF
END IF

SetFocus(dw_class_info)
SetColumn(dw_class_info, "location")


End of Script



CommandButton: cb_ok
X = 1953          Y = 1261          Width = 247          Height = 109
TabOrder = 40     Visible = true    Enabled = true       Text = "&OK"
```

Window: w_more_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:26:05

Script for: clicked event

```
//Closes the window w_more_class_info after storing the new or modified data into the structure
//that is returned to the command button more to be processed.

//Local Variables
Integer     lv_i_MaxCredits
Integer     lv_i_MinCredits
Integer     lv_i_ClassLimit
Integer     lv_i_LabMaxCredits
Integer     lv_i_LabMinCredits
String      lv_s_Location
String      lv_s_Building
String      lv_s_Room
String      lv_s_Flags
String      lv_s_Lab
String      lv_s_LabDays
String      lv_s_LabLocation
String      lv_s_LabBuilding
String      lv_s_LabRoom
Time        lv_t_LabStartTime
Time        lv_t_LabEndTime
//End Local Variables

lv_s_Location     =  Trim(GetItemString(dw_class_info, 1, "location"))
lv_i_MaxCredits   =  GetItemNumber(dw_class_info, 1, "max_credits")
lv_i_MinCredits   =  GetItemNumber(dw_class_info, 1, "min_credits")
lv_s_Building     =  Trim(GetItemString(dw_class_info, 1, "building"))
lv_s_Room         =  Trim(GetItemString(dw_class_info, 1, "room"))
lv_i_ClassLimit   =  GetItemNumber(dw_class_info, 1, "class_limit")
lv_s_Flags        =  Trim(GetItemString(dw_class_info, 1, "flags"))
lv_s_Lab          =  Trim(GetItemString(dw_class_info, 1, "lab"))

IF ((lv_s_Lab = "Y") OR (lv_s_Lab = "y")) THEN
   lv_s_LabDays      =  Trim(GetItemString(dw_lab_info, 1, "lab_days"))
```

```
   lv_t_LabStartTime =  GetItemTime(dw_lab_info, 1, "lab_start_time")
   lv_t_LabEndTime   =  GetItemTime(dw_lab_info, 1, "lab_end_time")
   lv_s_LabLocation  =  Trim(GetItemString(dw_lab_info, 1, "lab_location"))
   lv_i_LabMaxCredits   =  GetItemNumber(dw_lab_info, 1, "lab_max_credits")
   lv_i_LabMinCredits   =  GetItemNumber(dw_lab_info, 1, "lab_min_credits")
   lv_s_LabBuilding     =  Trim(GetItemString(dw_lab_info, 1, "lab_building"))
   lv_s_LabRoom         =  Trim(GetItemString(dw_lab_info, 1, "lab_room"))
END IF

//Validation
IF (IsNull(lv_s_Location) OR (lv_s_Location = "")) THEN
   MessageBox("Validation Error", "A location must be entered before leaving.", StopSign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "location")
   Return
ELSEIF (IsNull(lv_i_MaxCredits)) THEN
   MessageBox("Validation Error", "The maximum credits must be entered before leaving.", StopSign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "max_credits")
   Return
ELSEIF (IsNull(lv_i_MinCredits)) THEN
   MessageBox("Validation Error", "The minimum credits must be entered before leaving.", StopSign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "min_credits")
   Return
ELSEIF (lv_i_MinCredits > lv_i_MaxCredits) THEN
MessageBox("Validation Error", "The minimum credits cannot be greater than the maximum credits.", StopS
ign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "min_credits")
   Return
ELSEIF (IsNull(lv_s_Building) OR (lv_s_Building = "")) THEN
   MessageBox("Validation Error", "The building must be entered before leaving.", StopSign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "building")
   Return
```

```
ELSEIF (IsNull(lv_s_Room) OR (lv_s_Room = "")) THEN
   MessageBox("Validation Error", "The room must be entered before leaving.", StopSign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "room")
   Return
ELSEIF (IsNull(lv_i_ClassLimit)) THEN
   MessageBox("Validation Error", "The class limit must be entered before leaving.", StopSign!, OK!)
   SetFocus(dw_class_info)
   SetColumn(dw_class_info, "class_limit")
   Return
ELSEIF (IsNull(lv_s_Lab) OR (lv_s_Lab = "")) THEN
IF (MessageBox("Information", "Because there is no data in the lab question, there will be no scheduled
 lab with the course.", Information!, OkCancel!) = 1) THEN
      SetItem(dw_class_info, 1, "lab", "N")
      lv_s_Lab = "N"
   ELSE
      SetItem(dw_class_info, 1, "lab", "Y")
      lv_s_Lab = "Y"
      dw_lab_info.visible  =  TRUE
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_days")
      Return
   END IF
END IF

IF ((lv_s_Lab = "Y") OR (lv_s_Lab = "y")) THEN
   IF (IsNull(lv_s_LabDays) OR (lv_s_LabDays = "")) THEN
      MessageBox("Validation Error", "Lab days must be entered before leaving.", StopSign!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_days")
      Return
   ELSEIF (IsNull(lv_t_LabStartTime)) THEN
      MessageBox("Validation Error", "A lab start time must be entered before leaving.", StopSign!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_start_time")
      Return
```

```
   ELSEIF (IsNull(lv_t_LabEndTime)) THEN
      MessageBox("Validation Error", "A lab end time must be entered before leaving.", StopSign!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_end_time")
      Return
   ELSEIF (lv_t_LabStartTime > lv_t_LabEndTime) THEN
MessageBox("Validation Error", "The lab start time cannot be later than the lab end time.", StopSign
!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_start_time")
      Return
   ELSEIF (IsNull(lv_s_LabLocation) OR (lv_s_LabLocation = "")) THEN
      MessageBox("Validation Error", "The lab location must be entered before leaving.", StopSign!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_location")
      Return
   ELSEIF (IsNull(lv_i_LabMaxCredits)) THEN
MessageBox("Validation Error", "The lab maximum credits must be entered before leaving.", StopSign!,
 OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_max_credits")
      Return
   ELSEIF (IsNull(lv_i_LabMinCredits)) THEN
MessageBox("Validation Error", "The lab minimum credits must be entered before leaving.", StopSign!,
 OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_min_credits")
      Return
   ELSEIF (lv_i_LabMinCredits > lv_i_LabMaxCredits) THEN
MessageBox("Validation Error", "The lab minimum credits cannot be greater than the lab maximum credi
ts.", StopSign!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_max_credits")
      Return
   ELSEIF (IsNull(lv_s_LabBuilding) OR (lv_s_LabBuilding = "")) THEN
      MessageBox("Validation Error", "The lab building must be entered before leaving.", StopSign!, OK!)
```

```
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_building")
      Return
   ELSEIF (IsNull(lv_s_LabRoom) OR (lv_s_LabRoom = "")) THEN
      MessageBox("Validation Error", "The lab room must be entered before leaving.", StopSign!, OK!)
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_room")
      Return
   END IF
END IF

s_parms.first_time = FALSE
s_parms.location = lv_s_Location
s_parms.max_credits = lv_i_MaxCredits
s_parms.min_credits = lv_i_MinCredits
s_parms.building = lv_s_Building
s_parms.room = lv_s_Room
s_parms.class_limit = lv_i_ClassLimit
s_parms.flags = lv_s_Flags
s_parms.lab = lv_s_Lab
s_parms.lab_days = lv_s_LabDays
s_parms.lab_start_time = lv_t_LabStartTime
s_parms.lab_end_time = lv_t_LabEndTime
s_parms.lab_location = lv_s_LabLocation
s_parms.lab_max_credits = lv_i_LabMaxCredits
s_parms.lab_min_credits = lv_i_LabMinCredits
s_parms.lab_building = lv_s_LabBuilding
s_parms.lab_room = lv_s_LabRoom

PostEvent(uo_class_maint.cb_more, "uponreturn")

CloseWithReturn(w_more_class_info, s_parms)

End of Script
```

```
CommandButton: cb_cancel
X = 1605            Y = 1261            Width = 247         Height = 109
TabOrder = 30       Visible = true      Enabled = true      Text = "&Cancel"
Default = true

Script for: clicked  event
//Closes window w_more_class_info without setting the information into the structure to be returned.

close(w_more_class_info)

End of Script


DataWindow: dw_lab_info
X = 106             Y = 533             Width = 1898        Height = 653
TabOrder = 20       DataObject = "d_lab_info"               Border = true
LiveScroll = true   BorderStyle = stylebox!


DataWindow: dw_class_info
X = 46              Y = 65              Width = 2163        Height = 437
TabOrder = 10       Visible = true      Enabled = true      DataObject = "d_more_class_info"
LiveScroll = true   BorderStyle = stylebox!

Script for: dwnkey  event
//Used to determine whether the lab info datawindow should be displayed.
//The datawindow is displayed only if the field lab is y.

//Local Variables
String      lv_s_CurrentColumn
String      lv_s_Lab
//End Local Variables
```

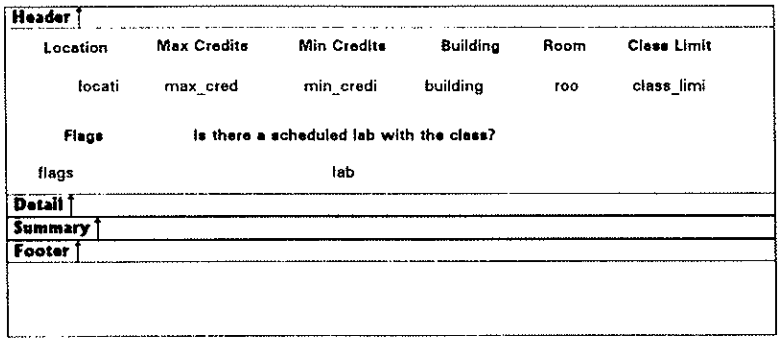
Window: w_more_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:26:05

```
lv_s_CurrentColumn = GetColumnName(dw_class_info)

IF ((lv_s_CurrentColumn = "lab") AND (NOT dw_lab_info.visible)) THEN
   AcceptText(dw_class_info)

   lv_s_Lab =  GetItemString(dw_class_info, 1, "lab")
   IF ((lv_s_Lab = "Y") OR (lv_s_Lab = "y")) THEN
      dw_lab_info.visible  =  TRUE
      dw_lab_info.enabled  =  TRUE
   END IF

   IF ((KeyDown(KeyTab!)) AND (KeyDown(KeyShift!))) THEN
      SetColumn(dw_class_info, "flags")
   END IF

   IF (KeyDown(KeyTab!)) THEN
      SetFocus(dw_lab_info)
      SetColumn(dw_lab_info, "lab_days")
   END IF
END IF


End of Script
```

DataWindow: d_more_class_info

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:34:26



DataWindow: d_more_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:34:26

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: flags
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 70
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: location
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: max_credits

Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 20
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: min_credits
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 30
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: building
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 40
Initial Value: None
Edit Style: Edit
Edit limit: 0

DataWindow: d_more_class_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:34:26

Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 50
Initial Value: None
Edit Style: Edit
Edit limit: 0

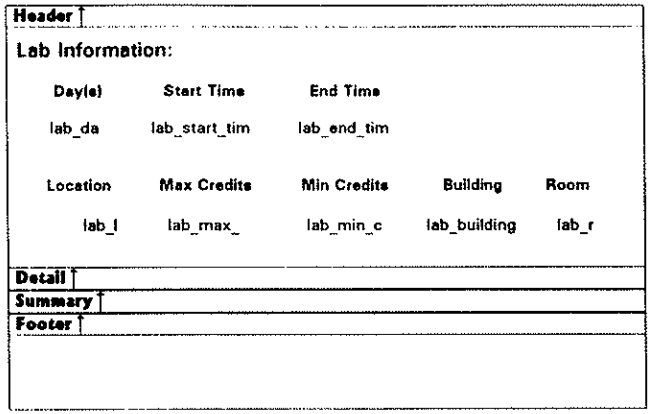
Column: class_limit
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 60
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: lab
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 80
Initial Value: None
Edit Style: Edit

DataWindow: d_lab_info

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:36:07



```
DataWindow: d_lab_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:36:07

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: lab_days
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: lab_start_time
    Format: "[time]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: lab_end_time
```

DataWindow: d_lab_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:36:07

Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 30
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: lab_location
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 40
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: lab_max_credits
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 50
Initial Value: None
Edit Style: Edit
Edit limit: 0

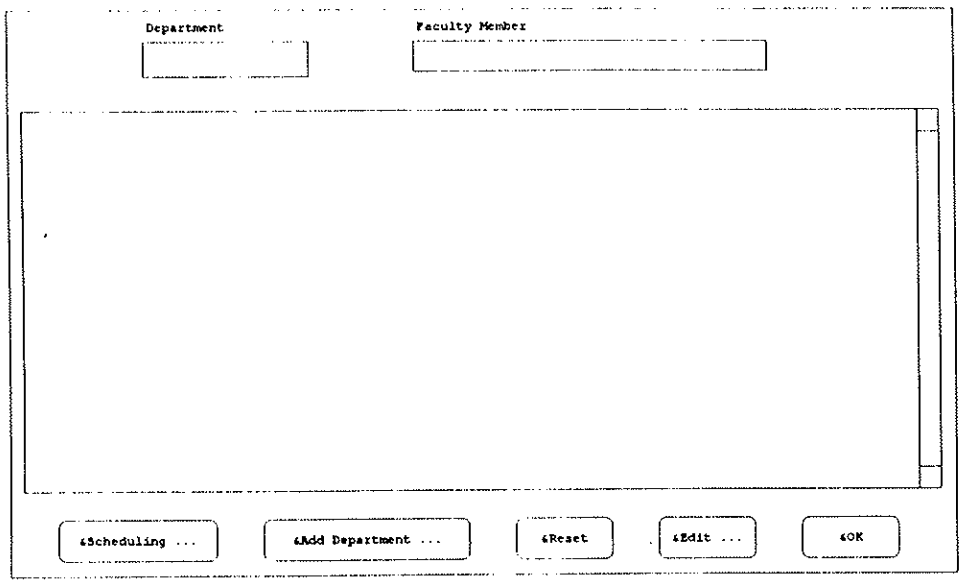
DataWindow: d_lab_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:36:07

Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 60
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: lab_building
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 70
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: lab_room
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 80
Initial Value: None
Edit Style: Edit

User Object: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:30:26



User Object: uo_prof_main
X = 0 Y = 0 Width = 2812 Height = 1473
TabOrder = 0 Visible = true Enabled = true BackColor = 12632256
ObjectType = customvisual!

Instance Variables
DataWindowChild iv_dwc_Faculty
DataWindowChild iv_dwc_Department

Boolean iv_b_SelectionMade
Boolean iv_b_TabDone
Boolean iv_b_UpDownArrowDone

End of Instance Variables

Script for: constructor event

```
//Retrieves all data used in the datawindows in the user object.

// Local Variables

// End Local Variables

dwGetChild(dw_faculty, "name_combined", iv_dwc_faculty)
dwGetChild(dw_department, "department", iv_dwc_department)

SetTransObject(iv_dwc_faculty, SQLCA)
SetTransObject(iv_dwc_department, SQLCA)
SetTransObject(dw_faculty, SQLCA)
SetTransObject(dw_department, SQLCA)
SetTransObject(dw_prof_xref, SQLCA)

Retrieve(dw_faculty)
Retrieve(dw_department)
Retrieve(dw_prof_xref)

SetSort(dw_faculty, "name_combined A")
SetSort(iv_dwc_faculty, "name_combined A")
SetSort(dw_department, "department A")
SetSort(iv_dwc_department, "department A")

Sort(dw_faculty)
Sort(iv_dwc_faculty)
Sort(dw_department)
Sort(iv_dwc_department)

SetSort(dw_prof_xref, "department A, name A")
```

```
User Object: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:30:26

Sort(dw_prof_xref)

InsertRow(dw_faculty, 1)
InsertRow(dw_department, 1)

IF (NOT (IsNull(gv_struct_parms.term) OR (gv_struct_parms.term = ""))) THEN
   IF (NOT (IsNull(gv_struct_parms.department) AND (gv_struct_parms.department = ""))) THEN
      cb_scheduling.enabled = TRUE
   END IF
END IF

iv_b_SelectionMade = FALSE

SetFocus(dw_department)

End of Script



Script for: other  event
//Used to attempt to control tabbing.

//Local Variables
CommandButton     lv_cb_which
DataWindow        lv_dw_which
GraphicObject     lv_go_WhichControl
String            lv_s_TextValue
String            lv_s_DataObject
//End Local Variables

IF (KeyDown(KeyTab!) AND KeyDown(KeyShift!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
// not sure how to explain the color setting ... trust me ... it needs to be there for now.
      st_1.textcolor = RGB(0, 0, 128)
      st_2.textcolor = RGB(0, 0, 128)
```

```
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&Scheduling ...") THEN
         SetFocus(dw_faculty)
         Return
      ELSEIF (lv_s_TextValue = "&Add Department ...") THEN
         IF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(dw_faculty)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Reset") THEN
         SetFocus(cb_add)
         Return
      ELSEIF (lv_s_TextValue = "&Edit ...") THEN
         IF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&OK") THEN
         IF (cb_edit.enabled) THEN
            SetFocus(cb_edit)
            Return
```

```
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_which.dataobject

      IF (lv_s_DataObject = "d_department_dddw") THEN
         SetFocus(cb_ok)
         Return
      ELSEIF (lv_s_DataObject = "d_professor_dddw") THEN
         SetFocus(dw_department)
         Return
      ELSEIF (lv_s_Dataobject = "d_prof_main_xref") THEN
         SetFocus(dw_faculty)
         Return
      ELSE
         Return
      END IF

   case else
      Return
   END Choose
ELSEIF (KeyDown(KeyTab!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
// not sure how to explain the color setting ... trust me ... it needs to be there for now.
```

```
User Object: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:30:26

      st_1.textcolor = RGB(0, 0, 128)
      st_2.textcolor = RGB(0, 0, 128)
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&Scheduling ...") THEN
         SetFocus(cb_add)
         Return
      ELSEIF (lv_s_TextValue = "&Add Department ...") THEN
         IF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_edit.enabled) THEN
            SetFocus(cb_edit)
            Return
         ELSE
            SetFocus(cb_ok)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Reset") THEN
         IF (cb_edit.enabled) THEN
            SetFocus(cb_edit)
            Return
         ELSE
            SetFocus(cb_ok)
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Edit ...") THEN
         SetFocus(cb_ok)
```

```
         Return
      ELSEIF (lv_s_TextValue = "&OK") THEN
         SetFocus(dw_department)
         Return
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_Which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_Which.dataobject

      IF (lv_s_DataObject = "d_department_dddw") THEN
         SetFocus(dw_faculty)
         Return
      ELSEIF (lv_s_DataObject = "d_professor_dddw") THEN
         IF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSEIF (lv_s_DataObject = "d_class_xref") THEN
         IF (cb_scheduling.enabled) THEN
            SetFocus(cb_scheduling)
            Return
         ELSE
            SetFocus(cb_add)
            Return
         END IF
      ELSE
         Return
      END IF
   case else
```

```
      Return
   END Choose
END IF

End of Script


Script for: getcontrolagain  event
//Called from the close of uo_prof_maint, used to re-retrieve data after changes have been made.

//Local Variables

//End Local Variables

Retrieve(dw_faculty)
Retrieve(dw_department)
Retrieve(dw_prof_xref)

SetSort(dw_faculty, "name_combined A")
SetSort(iv_dwc_faculty, "name_combined A")
SetSort(dw_department, "department A")
SetSort(iv_dwc_department, "department A")

Sort(dw_faculty)
Sort(iv_dwc_faculty)
Sort(dw_department)
Sort(iv_dwc_department)

SetSort(dw_prof_xref, "department A, last_name A, first_name A")
Sort(dw_prof_xref)

InsertRow(dw_faculty, 1)
InsertRow(dw_department, 1)
```

```
SelectRow(dw_prof_xref, 0, FALSE)

//Reset iv_struct_parms
gv_struct_parms.term              =  ""
gv_struct_parms.department        =  ""
gv_struct_parms.course_number     =  0
gv_struct_parms.section_number    =  ""
gv_struct_parms.faculty_member    =  ""

cb_reset.enabled = FALSE
cb_edit.enabled = FALSE
cb_scheduling.enabled = FALSE

iv_b_SelectionMade = FALSE

SetFocus(dw_department)

End of Script


DataWindow: dw_department
X = 403              Y = 85              Width = 494         Height = 93
TabOrder = 10        Visible = true      Enabled = true      DataObject = "d_department_dddw"
LiveScroll = true    BorderStyle = stylebox!

Script for: itemchanged  event
//Selects a row in the dw_prof_xref if a faculty member is selected in the dddw.

//Local Variables
Integer     lv_i_Row
Integer     lv_i_RowFound
String      lv_s_FacultyMember
String      lv_s_FilterString
String      lv_s_FindString
```

```
String      lv_s_Department
//End Local Variables

lv_s_FacultyMember = gv_struct_parms.faculty_member

lv_i_Row =  GetSelectedRow(iv_dwc_department, 0)

IF (lv_i_Row < 1) THEN
   Return
END IF

lv_s_Department   =  Trim(GetItemString(iv_dwc_department, lv_i_Row, "department"))
gv_struct_parms.department = lv_s_Department

cb_reset.enabled  =  TRUE

//Does the find string need to account for the fact that there is a term selected.
IF (NOT (IsNull(lv_s_FacultyMember) OR (lv_s_FacultyMember = ""))) THEN
   SelectRow(dw_prof_xref, 0, FALSE)
   lv_s_FindString = "department = " + '"' + lv_s_Department + '"' &
                           + "and name = " + '"' + lv_s_FacultyMember + '"'

   lv_i_RowFound = dwFind(dw_prof_xref, lv_s_FindString, 0, RowCount(dw_prof_xref))

   IF (lv_i_RowFound > 0) THEN
      SetRedraw(dw_prof_xref, FALSE)
      SelectRow(dw_prof_xref, lv_i_RowFound, TRUE)
      ScrollToRow(dw_prof_xref, lv_i_RowFound)
      SetRedraw(dw_prof_xref, TRUE)
      iv_b_SelectionMade = TRUE
   END IF

END IF

cb_edit.enabled = TRUE
```

End of Script

Script for: updateend event
//Triggered when a new department is added in the w_add_dept window.

```
//Local Variables
Integer     lv_i_InsertedRow
String      lv_s_FacultyMember
String      lv_s_Department
String      lv_s_FindString
//End Local Variables

SetRedraw(dw_prof_xref, FALSE)
SetRedraw(dw_faculty, FALSE)
SetRedraw(dw_department, FALSE)

SelectRow(dw_prof_xref, 0, FALSE)

lv_s_Department = gv_struct_parms.department

lv_s_FindString = "department = " + '"' + lv_s_Department + '"'

IF (dwFind(iv_dwc_department, lv_s_FindString, 1, RowCount(iv_dwc_department)) = 0) THEN
   lv_i_InsertedRow = InsertRow(iv_dwc_department, 0)
   SetItem(iv_dwc_department, lv_i_InsertedRow, "department", lv_s_Department)

   SetSort(dw_department, "department A")
   SetSort(iv_dwc_department, "department A")

   Sort(dw_department)
   Sort(iv_dwc_department)
END IF
```

```
InsertRow(dw_department, 1)

SetItem(dw_department, 1, "department", lv_s_Department)
ScrollToRow(dw_department, 1)

lv_s_FacultyMember = Trim(GetItemString(dw_faculty, 1, "name_combined"))

IF ((IsNull(lv_s_FacultyMember)) OR (lv_s_FacultyMember = "")) THEN
   cb_edit.enabled = FALSE
ELSE
   cb_edit.enabled = TRUE
   cb_edit.default = TRUE
   cb_scheduling.default = FALSE
   cb_add.default = FALSE
   cb_reset.default = FALSE
   cb_ok.default = FALSE
END IF

SetRedraw(dw_prof_xref, TRUE)
SetRedraw(dw_faculty, TRUE)
SetRedraw(dw_department, TRUE)

End of Script


Script for: dwnkey  event
//drop down datawindows do strange things on tabs so the following overrides tab and sets focus where it
hould be.

IF (KeyDown(keyTab!) AND KeyDown(keyShift!)) THEN
   SetFocus(cb_ok)
   SetActionCode(dw_department, 1)
   iv_b_TabDone   =  TRUE
// Don't know how to explain how this helps with tabbing but it does.
   st_2.textcolor = RGB(255, 0, 0)
```

```
   Return
ELSEIF (KeyDown(keyTab!)) THEN
   SetFocus(dw_faculty)
   SetActionCode(dw_department, 1)
   iv_b_TabDone    =  TRUE
// Don't know how to explain how this helps with tabbing but it does.
   st_2.textcolor = RGB(0, 255, 0)
   Return
END IF

End of Script
```

```
CommandButton: cb_reset
X = 1500            Y = 1325            Width = 289         Height = 109
TabOrder = 0        Visible = true      Text = "&Reset"

Script for: clicked  event
//Resets the data to what it looked like before rows were selected.

//Local Variables
Integer     lv_i_Row
//End Local Variables

SetRedraw(dw_prof_xref, FALSE)
SetRedraw(dw_faculty, FALSE)
SetRedraw(dw_department, FALSE)

SelectRow(dw_prof_xref, 0, FALSE)
ScrollToRow(dw_prof_xref, 1)

lv_i_Row = dwFind(dw_faculty, "name_combined = " + '"' + '"', 0, RowCount(dw_faculty))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_faculty, 1)
   ScrollToRow(dw_faculty, 1)
```

```
Window: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:30:26

ELSE
   ScrollToRow(dw_faculty, lv_i_Row)
END IF

lv_i_Row = dwFind(dw_department, "department = " + '"' + '"', 0, RowCount(dw_department))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_department, 1)
   ScrollToRow(dw_department, 1)
ELSE
   ScrollToRow(dw_department, lv_i_Row)
END IF

SetFocus(dw_department)

SetRedraw(dw_prof_xref, TRUE)
SetRedraw(dw_faculty, TRUE)
SetRedraw(dw_department, TRUE)

gv_struct_parms.term = ""
gv_struct_parms.department = ""

//Command Button Control
cb_reset.enabled = FALSE
cb_scheduling.enabled = FALSE
cb_edit.enabled = FALSE


End of Script



CommandButton: cb_ok
X = 2350            Y = 1325            Width = 289         Height = 109
TabOrder = 0        Visible = true      Enabled = true      Text = "&OK"

Script for: clicked  event
```

```
Window: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:30:26


//Local Variables

//End Local Variables

close (w_class_main_test)

End of Script


CommandButton: cb_edit
X = 1925            Y = 1325            Width = 289         Height = 109
TabOrder = 0        Visible = true      Text = "&Edit ..."

Script for: clicked  event
//Opens uo_prof_maint when a department is selected (a faculty member may also be selected but not requir
d).

//Local Variables
Integer           lv_i_SelectedRow
s_main_win_parms  s_parms
//End Local Variables

s_parms.Department      =  gv_struct_parms.department
s_parms.Faculty_Member  =  gv_struct_parms.faculty_member
OpenWithParm(w_maint_main, s_parms)


End of Script



CommandButton: cb_add
X = 750             Y = 1325            Width = 613         Height = 109
TabOrder = 0        Visible = true      Enabled = true      Text = "&Add Department ..."
```

```
Script for: clicked  event
//Opens w_add_dept so that a new department can be added.

//Local Variables

//End Local Variables

Open(w_add_dept)

End of Script
```

```
CommandButton: cb_scheduling
X = 142            Y = 1325           Width = 471        Height = 109
TabOrder = 0       Visible = true     Text = "&Scheduling ..."

Script for: clicked  event
//Opens the w_scheduling window with the department and term already selected.

OpenWithParm(w_scheduling, gv_struct_parms)

End of Script
```

```
DataWindow: dw_prof_xref
X = 42             Y = 265            Width = 2725       Height = 989
TabOrder = 0       Visible = true     Enabled = true     DataObject = "d_prof_main_xref"
VScrollBar = true  Border = true      LiveScroll = true  BorderStyle = stylebox!

Script for: clicked  event
//Selects the clicked row and sets the faculty member and department in the drop down datawindows.
```

Window: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 16:30:26

```
//Local Variables
Integer     lv_i_SelectedRow
Integer     lv_i_ClickedRow
Integer     lv_i_FindRow
String      lv_s_Department
String      lv_s_FacultyMember
String      lv_s_FindFacultyMember
String      lv_s_FindDepartment
String      lv_s_FindCourseSectionNum
String      lv_s_FilterString
//End Local Variables

lv_i_SelectedRow = GetSelectedRow(dw_prof_xref, 0)
lv_i_ClickedRow = GetClickedRow(dw_prof_xref)

SetRedraw(dw_prof_xref, FALSE)

IF (lv_i_SelectedRow = lv_i_ClickedRow) THEN
   SelectRow(dw_prof_xref, lv_i_ClickedRow, FALSE)
   gv_struct_parms.department = ""
   gv_struct_parms.faculty_member = ""
   cb_reset.enabled = FALSE
   cb_edit.enabled = FALSE
ELSE
   SelectRow(dw_prof_xref, lv_i_SelectedRow, FALSE)
   SelectRow(dw_prof_xref, lv_i_ClickedRow, TRUE)
   lv_s_Department      =  Trim(GetItemString(dw_prof_xref, lv_i_ClickedRow, "department"))
   lv_s_FacultyMember   =  Trim(GetItemString(dw_prof_xref, lv_i_ClickedRow, "name"))

   gv_struct_parms.department = lv_s_Department
   gv_struct_parms.faculty_member = lv_s_FacultyMember

   lv_s_FindFacultyMember = "name_combined = " + '"' + lv_s_FacultyMember + '"'
   lv_i_FindRow = dwFind(dw_faculty, lv_s_FindFacultyMember, 0, RowCount(dw_faculty))
   IF (lv_i_FindRow > 0) THEN
      ScrollToRow(dw_faculty, lv_i_FindRow)
```

```
   END IF

   lv_s_FindDepartment = "department = " + '"' + lv_s_Department + '"'
   lv_i_FindRow = dwFind(dw_department, lv_s_FindDepartment, 0, RowCount(dw_department))
   IF (lv_i_FindRow > 0) THEN
      ScrollToRow(dw_department, lv_i_FindRow)
   END IF

   cb_reset.enabled = TRUE
   cb_edit.enabled = TRUE

   SetFocus(cb_edit)
END IF

SetRedraw(dw_prof_xref, TRUE)

iv_b_SelectionMade = TRUE

End of Script


Script for: doubleclicked  event
//Highlights the clicked row and triggers the "clicked" event of command button edit.

//Local Variables
Integer     lv_i_Row
//End Local Variables

lv_i_Row = GetSelectedRow(dw_prof_xref, 0)

IF (lv_i_Row > 0) THEN
   gv_struct_parms.department = Trim(GetItemString(dw_prof_xref, lv_i_Row, "department"))
   gv_struct_parms.faculty_member = Trim(GetItemString(dw_prof_xref, lv_i_Row, "name"))

   cb_edit.enabled = TRUE
```

```
   TriggerEvent(cb_edit, "clicked")
END IF

End of Script
```

```
DataWindow: dw_faculty
X = 1207            Y = 85              Width = 1047        Height = 81
TabOrder = 0        Visible = true      Enabled = true      DataObject = "d_professor_dddw"
LiveScroll = true   BorderStyle = stylebox!

Script for: itemchanged  event
//Selects a row in the dw_prof_xref if a department is also selected.

//Local Variables
Integer     lv_i_Row
Integer     lv_i_RowFound
String      lv_s_FacultyMember
String      lv_s_FilterString
String      lv_s_Department
//End Local Variables

lv_s_Department = gv_struct_parms.department

lv_i_Row =  GetSelectedRow(iv_dwc_faculty, 0)

IF (lv_i_Row < 1) THEN
   Return
END IF

lv_s_FacultyMember   =  Trim(GetItemString(iv_dwc_faculty, lv_i_Row, "name_combined"))
gv_struct_parms.faculty_member = lv_s_FacultyMember

cb_reset.enabled  =  TRUE
```

```
Window: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:30:26


//Does the filter string need to account for the fact that there is a department selected.
IF (NOT (IsNull(lv_s_Department) OR (lv_s_Department = ""))) THEN
   SelectRow(dw_prof_xref, 0, FALSE)

   lv_s_FilterString = "department = " + '"' + lv_s_Department + '"' &
                           + " and name = " + '"' + lv_s_FacultyMember + '"'

   lv_i_RowFound = dwFind(dw_prof_xref, lv_s_FilterString, 0, RowCount(dw_prof_xref))

   IF (lv_i_RowFound > 0) THEN
      SetRedraw(dw_prof_xref, FALSE)
      SelectRow(dw_prof_xref, lv_i_RowFound, TRUE)
      ScrollToRow(dw_prof_xref, lv_i_RowFound)
      SetRedraw(dw_prof_xref, TRUE)
      iv_b_SelectionMade = TRUE
   END IF
   cb_edit.enabled    =  TRUE
END IF

End of Script



Script for: updateend  event
//Triggered when a faculty member is added in the uo_prof_maint user object.

//Local Variables
Integer     lv_i_InsertedRow
String      lv_s_FacultyMember
String      lv_s_Department
String      lv_s_FindString
//End Local Variables

SetRedraw(dw_prof_xref, FALSE)
SetRedraw(dw_faculty, FALSE)
```

```
SetRedraw(dw_department, FALSE)

SelectRow(dw_prof_xref, 0, FALSE)

lv_s_FacultyMember = gv_struct_parms.faculty_member

lv_s_FindString = "name_combined = " + '"' + lv_s_FacultyMember + '"'

IF (dwFind(iv_dwc_faculty, lv_s_FindString, 1, RowCount(iv_dwc_faculty)) = 0) THEN
   lv_i_InsertedRow = InsertRow(iv_dwc_faculty, 0)
   SetItem(iv_dwc_faculty, lv_i_InsertedRow, "name_combined", lv_s_FacultyMember)

   SetSort(dw_faculty, "name_combined A")
   SetSort(iv_dwc_faculty, "name_combined A")

   Sort(dw_faculty)
   Sort(iv_dwc_faculty)
END IF

InsertRow(dw_faculty, 1)

SetItem(dw_faculty, 1, "name_combined", lv_s_FacultyMember)
ScrollToRow(dw_faculty, 1)

lv_s_Department = Trim(GetItemString(dw_department, 1, "department"))

IF ((IsNull(lv_s_Department)) OR (lv_s_Department = "")) THEN
   cb_edit.enabled = FALSE
ELSE
   cb_edit.enabled = TRUE
   cb_edit.default = TRUE
   cb_scheduling.default = FALSE
   cb_add.default = FALSE
   cb_reset.default = FALSE
   cb_ok.default = FALSE
END IF
```

```
SetRedraw(dw_prof_xref, TRUE)
SetRedraw(dw_faculty, TRUE)
SetRedraw(dw_department, TRUE)

End of Script
```

Script for: dwnkey event

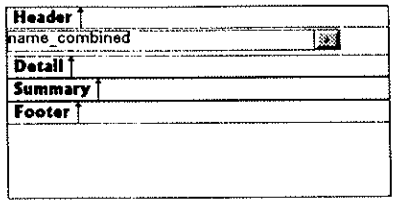
```
//drop down datawindows do strange things on tabs so the following overrides tab and sets focus where it
hould be.

IF (KeyDown(KeyTab!) AND KeyDown(KeyShift!)) THEN
   SetFocus(dw_department)
   SetActionCode(dw_faculty, 1)
// Used to control tabbing ... not sure why it works
   st_1.textcolor = RGB(255, 0, 0)
   iv_b_TabDone = TRUE
   Return
ELSEIF (KeyDown(KeyTab!)) THEN
   SetFocus(cb_scheduling)
   SetActionCode(dw_faculty, 1)
// Used to control tabbing ... not sure why it works
   st_1.textcolor = RGB(0, 255, 0)
   iv_b_TabDone = TRUE
   Return
END IF

End of Script
```

```
Window: uo_prof_main
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95    Time: 16:30:26


StaticText: st_2
X = 403             Y = 13              Width = 330         Height = 69
TabOrder = 0        Visible = true      Text = "Department" TextColor = 8388608
BackColor = 12632256                    Alignment = left!   FillPattern = solid!


StaticText: st_1
X = 1207            Y = 13              Width = 353         Height = 69
TabOrder = 0        Visible = true      Text = "Faculty Member"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!
```

DataWindow: d_professor_dddw

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:17:06



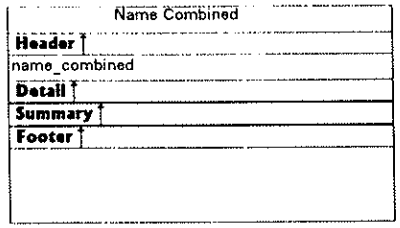
DataWindow: d_professor_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:17:06

Retrieve: PBSELECT(TABLE(NAME="professor_xref") COLUMN(NAME="professor_xref.name_combined"))
Arguments: None
Update Table: professor_xref
Filter: None
Sort: None
Sparse: None
Column: name_combined
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: DropDownDataWindow
      Name: d_professor_list
      Data Column: name_combined
      Display Column: name_combined

DataWindow: d_professor

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:17:34



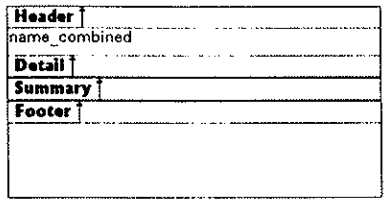
DataWindow: d_professor
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:17:34

Retrieve: PBSELECT(TABLE(NAME="professor_xref") COLUMN(NAME="professor_xref.name_combined"))
Arguments: None
Update Table: professor_xref
Filter: None
Sort: None
Sparse: None
Column: name_combined
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 35

DataWindow: d_professor_list

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:15:46



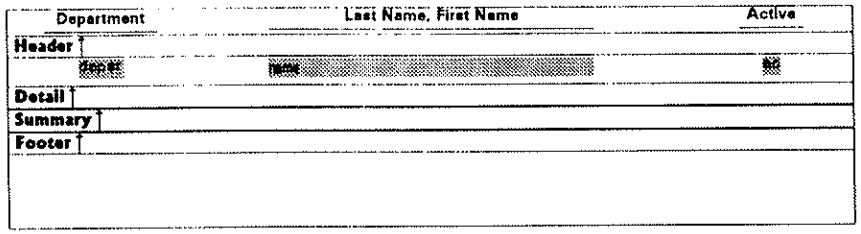
DataWindow: d_professor_list
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:15:46

Retrieve: PBSELECT(TABLE(NAME="professor_xref") COLUMN(NAME="professor_xref.name_combined"))
Arguments: None
Update Table: professor_xref
Filter: None
Sort: None
Sparse: None
Column: name_combined
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 35

DataWindow: d_prof_main_xref

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:18:44



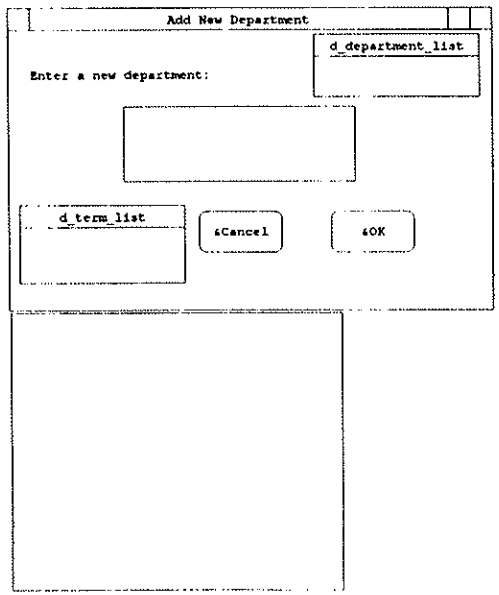
DataWindow: d_prof_main_xref
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:18:44

Retrieve: PBSELECT(TABLE(NAME="professor_information") COLUMN(NAME="professor_information.department")
 COLUMN(NAME="professor_information.name") COLUMN(NAME="professor_information.active"))
Arguments: None
Update Table: professor_information
Filter: None
Sort: None
Sparse: None
Column: department
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 4
Column: name
    Updateable: No
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None

DataWindow: d_prof_main_xref
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:18:44

Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: active
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 1

Window: w_add_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:35:06



```
Visible = true      Enabled = true      TitleBar = true     Title = "Add New Department"
ControlMenu = true  MinBox = true       MaxBox = true       Resizable = true
WindowType = main!  WindowState = normal!                   BackColor = 12632256

Script for: open  event
//Set the datawindow dw_department to retrieve data.  Inserts a row into the datawindow dw_add.

//Local Variables

//End Local Variables

SetTransObject(dw_department, SQLCA)

dwShareData(uo_prof_main.dw_department, dw_department)


InsertRow(dw_add, 1)
ScrollToRow(dw_add, 1)


End of Script



Graph: gr_2
X = 5               Y = 737             Width = 988         Height = 721
TabOrder = 0        Visible = true      TextColor = 0       BackColor = 12632256
TextColor = 6316128 Spacing = 100       Elevation = 20      Rotation = -20
Perspective = 2     Title = "(None)"    Border = true       BorderStyle = stylebox!
GraphType = colgraph!                   Legend = atbottom!


DataWindow: dw_department
X = 910             Y = 13              Width = 494         Height = 165
TabOrder = 0        Enabled = true      DataObject = "d_department_list"
TitleBar = true     Title = "Department List"               Border = true
LiveScroll = true   BorderStyle = stylebox!
```

```
Window: w_add_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:35:06


DataWindow: dw_term
X = 33              Y = 457             Width = 494         Height = 205
TabOrder = 0        Enabled = true      DataObject = "d_term_list"
TitleBar = true     Title = "Term List" Border = true       LiveScroll = true
BorderStyle = stylebox!


StaticText: st_1
X = 55              Y = 73              Width = 732         Height = 93
TabOrder = 0        Visible = true      Text = "Enter a new department:"
TextColor = 33554432                    BackColor = 12632256
Alignment = left!   FillPattern = solid!


CommandButton: cb_ok
X = 961             Y = 473             Width = 247         Height = 109
TabOrder = 30       Visible = true      Enabled = true      Text = "&OK"

Script for: clicked  event
//Closes the window w_add_dept with saving the changes to the database regarding the new department.

//Local Variables
Boolean     lv_b_DepartmentOkay
Integer     lv_i_FoundRow
Integer     lv_i_InsertedRow
Integer     lv_i_NumberOfRows
Integer     lv_i_NumberOfRowsDWC
String      lv_s_Department
String      lv_s_FilterString
String      lv_s_OldDepartment
//End Local Variables

AcceptText(dw_add)
```

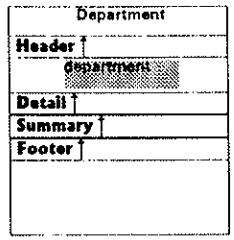
```
Window: w_add_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:35:06

lv_s_Department   =  Trim(GetItemString(dw_add, 1, "department"))

IF (NOT (IsNull(lv_s_Department) OR (lv_s_Department = ""))) THEN
   lv_s_FilterString = "department = " + '"' + lv_s_Department + '"'
   lv_i_FoundRow = dwFind(dw_department, lv_s_FilterString, 0, RowCount(dw_department))
   IF (lv_i_FoundRow = 0) THEN
      lv_i_InsertedRow = InsertRow(dw_department, 0)
      SetItem(dw_department, lv_i_InsertedRow, "department", lv_s_Department)
      gv_struct_parms.department = lv_s_Department
   ELSE
      MessageBox("Information", "This department already exists.", Information!, OK!)
      TriggerEvent(cb_cancel, "clicked")
      Return
   END IF
END IF

//Update database with any changes
IF ((ModifiedCount(dw_department) > 0) OR (DeletedCount(dw_department) > 0)) THEN
   DeleteRow(dw_department, 1)
   IF ((Update(dw_department) = 1)) THEN
      COMMIT;
   ELSE
      ROLLBACK;
   END IF
END IF

dwShareDataOff(dw_department)

close(w_add_dept)

End of Script
```

```
Window: w_add_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:35:06


CommandButton: cb_cancel
X = 567             Y = 473             Width = 247         Height = 109
TabOrder = 20       Visible = true      Enabled = true      Text = "&Cancel"
Default = true

Script for: clicked  event
//Closes the window w_add_dept without saving the new department.

dwShareDataOff(dw_department)

close(w_add_dept)

End of Script


DataWindow: dw_add
X = 343             Y = 201             Width = 691         Height = 197
TabOrder = 10       Visible = true      Enabled = true      DataObject = "d_add_dept"
BorderStyle = stylebox!
```

DataWindow: d_add_dept

Library: e:\thesis\appl\schedule.pbl

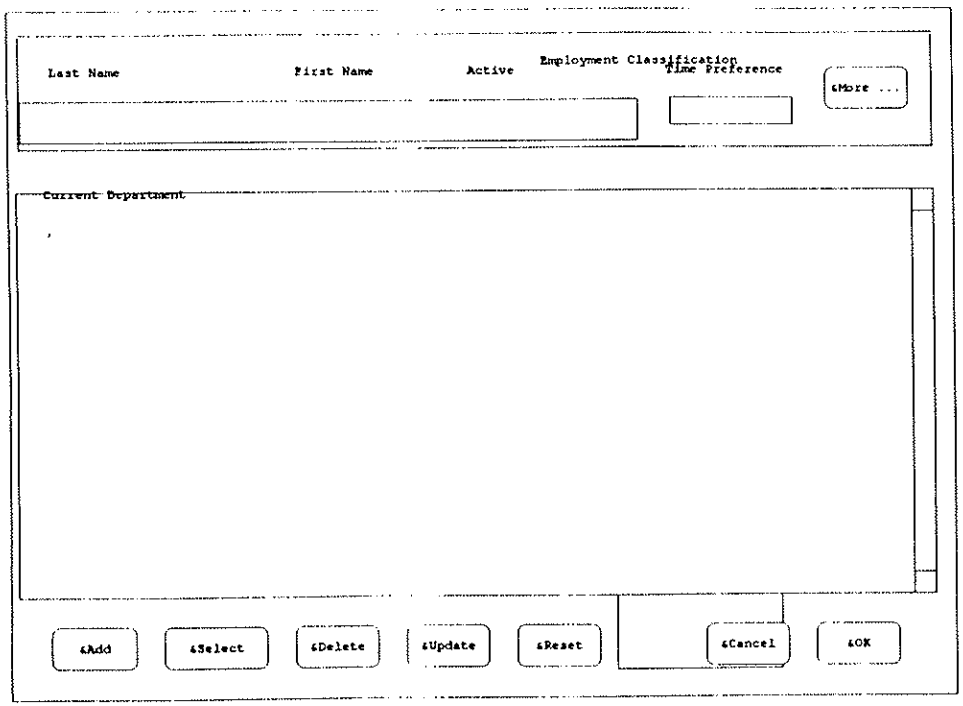
Date: 5/2/95 Time: 18:01:16



DataWindow: d_add_dept
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 18:01:16

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: department
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 4

User Object: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:32:19



User Object: uo_prof_maint
X = 0 Y = 0 Width = 2803 Height = 1789
TabOrder = 0 Visible = true Enabled = true Border = true
BackColor = 12632256 ObjectType = customvisual!

Instance Variables
Boolean iv_b_ChangesMade
Boolean iv_b_TabDone

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19


CommandButton  iv_cb_CurrentDefault

DataWindowChild   iv_dwc_time

Integer     iv_i_UpdateRow
Integer     iv_i_Row

s_main_win_parms  s_MainParms

s_prof_info_parms s_InfoParms

End of Instance Variables


Script for: constructor  event
//Retrieves all data from the database needed for the user object.

//Local Variables
String      lv_s_FindString
Integer     lv_i_FoundRow
//End Local Variables

SetPointer(Hourglass!)

dwShareData(uo_prof_main.dw_faculty, dw_professor)

s_MainParms = Message.PowerObjectParm

dwGetChild(dw_time, "time_type", iv_dwc_time)

SetTransObject(dw_prof_info_xref, SQLCA)
SetTransObject(iv_dwc_time, SQLCA)
SetTransObject(dw_time, SQLCA)

Retrieve(dw_prof_info_xref, s_MainParms.department)
```

```
Retrieve(dw_time)

SetSort(iv_dwc_time, "time_type A")
Sort(iv_dwc_time)

SetSort(dw_time, "time_type A")
Sort(dw_time)

SetSort(dw_prof_info_xref, "name A")
Sort(dw_prof_info_xref)

IF (NOT s_MainParms.faculty_member = "") THEN
   lv_s_FindString = "name = " + '"' + s_MainParms.faculty_member + '"'
   lv_i_FoundRow = dwFind(dw_prof_info_xref, lv_s_FindString, 1, RowCount(dw_prof_info_xref))

   SelectRow(dw_prof_info_xref, 0, FALSE)
   SelectRow(dw_prof_info_xref, lv_i_FoundRow, TRUE)

   iv_i_Row = lv_i_FoundRow

   dw_prof_info_add.enabled    =  FALSE
   dw_prof_info_update.enabled    =  FALSE

   cb_add.enabled = FALSE
   cb_add.default = FALSE
   cb_select.enabled = TRUE
   cb_select.default = TRUE
   iv_cb_CurrentDefault =  cb_select
   cb_delete.enabled = TRUE
   cb_delete.default =  FALSE
   cb_reset.enabled = TRUE
   cb_reset.default  =  FALSE
   cb_update.enabled =  FALSE
   cb_update.default =  FALSE
   cb_cancel.enabled =  FALSE
   cb_cancel.default =  FALSE
```

```
User Object: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

   cb_more.enabled    =  FALSE
   cb_more.default    =  FALSE

   SetFocus(cb_select)
ELSE
   iv_cb_CurrentDefault =  cb_add
   SetFocus(dw_prof_info_add)
END IF

InsertRow(dw_time, 1)
InsertRow(dw_prof_info_add, 1)
InsertRow(dw_prof_info_update, 1)

iv_b_ChangesMade = FALSE
s_InfoParms.first_time = TRUE

End of Script



Script for: other  event
//Used to attempt to control tabbing.

//Local Variables
CommandButton     lv_cb_which
DataWindow        lv_dw_which
GraphicObject     lv_go_WhichControl
String            lv_s_TextValue
String            lv_s_DataObject
//End Local Variables

IF (KeyDown(KeyTab!) AND KeyDown(KeyShift!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
      Return
   END IF
```

```
lv_go_WhichControl = GetFocus()

choose case TypeOf(lv_go_WhichControl)

case CommandButton!
   lv_cb_which = lv_go_WhichControl
   lv_s_TextValue = lv_cb_which.text
   IF (lv_s_TextValue = "&More ...") THEN
      IF (dw_time.enabled) THEN
         SetFocus(dw_time)
         Return
      ELSEIF (dw_prof_info_add.enabled) THEN
         SetFocus(dw_prof_info_add)
         SetColumn(dw_prof_info_add, "emp_type")
         Return
      ELSEIF (dw_prof_info_update.enabled) THEN
         SetFocus(dw_prof_info_update)
         SetColumn(dw_prof_info_update, "emp_type")
         Return
      ELSEIF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&Add") THEN
      IF (cb_more.enabled) THEN
         SetFocus(cb_more)
         Return
      ELSEIF (dw_time.enabled) THEN
         SetFocus(dw_time)
         Return
      ELSEIF (dw_prof_info_add.enabled) THEN
         SetFocus(dw_prof_info_add)
         SetColumn(dw_prof_info_add, "emp_type")
```

```
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Select") THEN
         IF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_time.enabled) THEN
            SetFocus(dw_time)
            Return
         ELSEIF (dw_prof_info_add.enabled) THEN
            SetFocus(dw_prof_info_add)
            SetColumn(dw_prof_info_add, "emp_type")
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Delete") THEN
```

```
         IF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_time.enabled) THEN
            SetFocus(dw_time)
            Return
         ELSEIF (dw_prof_info_add.enabled) THEN
            SetFocus(dw_prof_info_add)
            SetColumn(dw_prof_info_add, "emp_type")
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Update") THEN
         IF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
```

```
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_time.enabled) THEN
            SetFocus(dw_time)
            Return
         ELSEIF (dw_prof_info_add.enabled) THEN
            SetFocus(dw_prof_info_add)
            SetColumn(dw_prof_info_add, "emp_type")
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Reset") THEN
         IF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
```

```
        ELSEIF (dw_time.enabled) THEN
           SetFocus(dw_time)
           Return
        ELSEIF (dw_prof_info_add.enabled) THEN
           SetFocus(dw_prof_info_add)
           SetColumn(dw_prof_info_add, "emp_type")
           Return
        ELSEIF (dw_prof_info_update.enabled) THEN
           SetFocus(dw_prof_info_update)
           SetColumn(dw_prof_info_update, "emp_type")
           Return
        ELSEIF (cb_ok.enabled) THEN
           SetFocus(cb_ok)
           Return
        ELSE
           Return
        END IF
     ELSEIF (lv_s_TextValue = "&Cancel") THEN
        IF (cb_reset.enabled) THEN
           SetFocus(cb_reset)
           Return
        ELSEIF (cb_update.enabled) THEN
           SetFocus(cb_update)
           Return
        ELSEIF (cb_delete.enabled) THEN
           SetFocus(cb_delete)
           Return
        ELSEIF (cb_select.enabled) THEN
           SetFocus(cb_select)
           Return
        ELSEIF (cb_add.enabled) THEN
           SetFocus(cb_add)
           Return
        ELSEIF (cb_more.enabled) THEN
           SetFocus(cb_more)
           Return
```

```
      ELSEIF (dw_time.enabled) THEN
         SetFocus(dw_time)
         Return
      ELSEIF (dw_prof_info_add.enabled) THEN
         SetFocus(dw_prof_info_add)
         SetColumn(dw_prof_info_add, "emp_type")
         Return
      ELSEIF (dw_prof_info_update.enabled) THEN
         SetFocus(dw_prof_info_update)
         SetColumn(dw_prof_info_update, "emp_type")
         Return
      ELSEIF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&OK") THEN
      IF (cb_cancel.enabled) THEN
         SetFocus(cb_cancel)
         Return
      ELSEIF (cb_reset.enabled) THEN
         SetFocus(cb_reset)
         Return
      ELSEIF (cb_update.enabled) THEN
         SetFocus(cb_update)
         Return
      ELSEIF (cb_delete.enabled) THEN
         SetFocus(cb_delete)
         Return
      ELSEIF (cb_select.enabled) THEN
         SetFocus(cb_select)
         Return
      ELSEIF (cb_add.enabled) THEN
         SetFocus(cb_add)
         Return
```

```
         ELSEIF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_time.enabled) THEN
            SetFocus(dw_time)
            Return
         ELSEIF (dw_prof_info_add.enabled) THEN
            SetFocus(dw_prof_info_add)
            SetColumn(dw_prof_info_add, "emp_type")
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_which.dataobject

      IF (lv_s_DataObject = "d_prof_info_add") THEN
         Return
      ELSEIF (lv_s_DataObject = "d_prof_info_update") THEN
         Return
      ELSEIF (lv_s_DataObject = "d_prof_info") THEN
         IF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (dw_time.enabled) THEN
            SetFocus(dw_time)
```

User Object: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:32:19

```
            Return
         ELSEIF (dw_prof_info_add.enabled) THEN
            SetFocus(dw_prof_info_add)
            SetColumn(dw_prof_info_add, "emp_type")
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_DataObject = "d_time_dddw") THEN
         IF (dw_prof_info_add.enabled) THEN
            SetFocus(dw_prof_info_add)
            SetColumn(dw_prof_info_add, "emp_type")
            Return
         ELSEIF (dw_prof_info_update.enabled) THEN
            SetFocus(dw_prof_info_update)
            SetColumn(dw_prof_info_update, "emp_type")
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case else
      Return
```

```
   END Choose
ELSEIF (KeyDown(KeyTab!)) THEN
   IF (iv_b_TabDone) THEN
      iv_b_TabDone = FALSE
      Return
   END IF

   lv_go_WhichControl = GetFocus()

   choose case TypeOf(lv_go_WhichControl)

   case CommandButton!
      lv_cb_which = lv_go_WhichControl
      lv_s_TextValue = lv_cb_which.text
      IF (lv_s_TextValue = "&More ...") THEN
         IF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
```

```
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Add") THEN
         IF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Select") THEN
         IF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
```

```
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Delete") THEN
         IF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_TextValue = "&Update") THEN
         IF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
```

```
      END IF
   ELSEIF (lv_s_TextValue = "&Reset") THEN
      IF (cb_cancel.enabled) THEN
         SetFocus(cb_cancel)
         Return
      ELSEIF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&Cancel") THEN
      IF (cb_ok.enabled) THEN
         SetFocus(cb_ok)
         Return
      ELSE
         Return
      END IF
   ELSEIF (lv_s_TextValue = "&OK") THEN
      IF (dw_prof_info_add.enabled) THEN
         SetFocus(dw_prof_info_add)
         SetColumn(dw_prof_info_add, "last_name")
         Return
      ELSEIF (dw_prof_info_update.enabled) THEN
         SetFocus(dw_prof_info_update)
         SetColumn(dw_prof_info_update, "active")
         Return
      ELSEIF (dw_time.enabled) THEN
         SetFocus(dw_time)
         Return
      ELSEIF (cb_more.enabled) THEN
         SetFocus(cb_more)
         Return
      ELSEIF (cb_add.enabled) THEN
         SetFocus(cb_add)
         Return
```

```
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case DataWindow!
      lv_dw_Which = lv_go_WhichControl

      lv_s_DataObject = lv_dw_Which.dataobject

      IF (lv_s_DataObject = "d_prof_info_add") THEN
         Return
      ELSEIF (lv_s_DataObject = "d_prof_info_update") THEN
         Return
      ELSEIF (lv_s_DataObject = "d_prof_info") THEN
         IF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_select.enabled) THEN
```

```
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSEIF (lv_s_DataObject = "d_time_dddw") THEN
         IF (cb_more.enabled) THEN
            SetFocus(cb_more)
            Return
         ELSEIF (cb_add.enabled) THEN
            SetFocus(cb_add)
            Return
         ELSEIF (cb_select.enabled) THEN
            SetFocus(cb_select)
            Return
         ELSEIF (cb_delete.enabled) THEN
            SetFocus(cb_delete)
            Return
         ELSEIF (cb_update.enabled) THEN
            SetFocus(cb_update)
            Return
```

```
         ELSEIF (cb_reset.enabled) THEN
            SetFocus(cb_reset)
            Return
         ELSEIF (cb_cancel.enabled) THEN
            SetFocus(cb_cancel)
            Return
         ELSEIF (cb_ok.enabled) THEN
            SetFocus(cb_ok)
            Return
         ELSE
            Return
         END IF
      ELSE
         Return
      END IF

   case else
      Return
   END Choose
END IF

End of Script


DataWindow: dw_professor
X = 1793            Y = 1357            Width = 494         Height = 361
TabOrder = 60       DataObject = "d_professor"              Border = true
LiveScroll = true   BorderStyle = stylebox!


DataWindow: dw_time
X = 1962            Y = 233             Width = 366         Height = 73
TabOrder = 20       Visible = true      Enabled = true      DataObject = "d_time_dddw"
LiveScroll = true   BorderStyle = stylebox!
```

```
//Local Variables

//End Local Variables

IF (dw_prof_info_update.enabled) THEN
   cb_update.enabled = TRUE
END IF

End of Script



StaticText: st_7
X = 92              Y = 441             Width = 439         Height = 73
TabOrder = 0        Visible = true      Text = "Current Department"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!


DataWindow: dw_prof_info_update
X = 37              Y = 237             Width = 1829        Height = 89
TabOrder = 10       Enabled = true      DataObject = "d_prof_info_update"
LiveScroll = true   BorderStyle = stylebox!

Script for: editchanged  event
//Once data has been modified, the update command button is enabled.

//Local Variables

//End Local Variables

//Indicate that changes were made
iv_b_ChangesMade = TRUE

//Command Button Control
cb_update.enabled = TRUE

End of Script
```

Script for: dwnkey event

```
//Used to attempt to control tabbing.

//Local Variables
String      lv_s_CurrentColumn
//End Local Variables

lv_s_CurrentColumn = GetColumnName(dw_prof_info_update)

IF (KeyDown(keyTab!) AND KeyDown(keyShift!) AND (lv_s_CurrentColumn = "active")) THEN
   iv_b_TabDone   =  TRUE
   SetFocus(cb_ok)
   Return
ELSEIF (KeyDown(keyTab!) AND (lv_s_CurrentColumn = "emp_type")) THEN
   iv_b_TabDone   =  TRUE
   cb_update.enabled    =  TRUE
   cb_reset.enabled     =  TRUE
   SetFocus(dw_time)
   Return
END IF

End of Script
```

StaticText: st_6

```
X = 1939            Y = 125             Width = 366         Height = 73
TabOrder = 0        Visible = true      Text = "Time Preference"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!
```

```
StaticText: st_4
X = 1569            Y = 77              Width = 293         Height = 121
TabOrder = 0        Visible = true      Text = "Employment Classification"
TextColor = 8388608 BackColor = 12632256                    Alignment = left!
FillPattern = solid!

StaticText: st_3
X = 1354            Y = 125             Width = 147         Height = 73
TabOrder = 0        Visible = true      Text = "Active"     TextColor = 8388608
BackColor = 12632256                    Alignment = left!   FillPattern = solid!

StaticText: st_2
X = 842             Y = 125             Width = 252         Height = 73
TabOrder = 0        Visible = true      Text = "First Name" TextColor = 8388608
BackColor = 12632256                    Alignment = left!   FillPattern = solid!

StaticText: st_1
X = 110             Y = 125             Width = 275         Height = 73
TabOrder = 0        Visible = true      Text = "Last Name"  TextColor = 8388608
BackColor = 12632256                    Alignment = left!   FillPattern = solid!

CommandButton: cb_more
X = 2423            Y = 157             Width = 247         Height = 109
TabOrder = 40       Visible = true      Text = "&More ..."

Script for: clicked  event
//Opens the w_more_prof_info window used to get the additional required information about
//the faculty member needed for the scheduling portion.

//Local Variables
```

```
//End Local Variables

IF (dw_prof_info_add.visible) THEN
   s_InfoParms.add_mode = TRUE
ELSE
   s_InfoParms.add_mode = FALSE
   cb_update.enabled = TRUE
END IF

OpenWithParm(w_more_prof_info, s_InfoParms)

End of Script
```

Script for: uponreturn event

```
//Enables the appropriate buttons and keeps track of the default button.

//Local Variables

//End Local Variables

s_InfoParms = Message.PowerObjectParm

IF (dw_prof_info_add.enabled) THEN
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add
   SetFocus(cb_add)
ELSEIF (dw_prof_info_update.enabled) THEN
   iv_cb_CurrentDefault.default  =  FALSE
   cb_update.default =  TRUE
   iv_cb_CurrentDefault =  cb_update
   SetFocus(cb_update)
END IF
```

```
iv_b_ChangesMade = TRUE

End of Script



Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_more

End of Script



CommandButton: cb_ok
X = 2387          Y = 1601          Width = 247       Height = 109
TabOrder = 130    Visible = true    Enabled = true    Text = "&OK"

Script for: clicked  event
//Saves any new and changed data back to the database before closing the window.

//Local Variables

//End Local Variables

//Update database with current changes if any were made.
IF ((ModifiedCount(dw_prof_info_xref) > 0) OR (DeletedCount(dw_prof_info_xref) > 0)) THEN
   IF (Update(dw_prof_info_xref) = 1) THEN
      COMMIT;
```

```
   ELSE
      ROLLBACK;
   END IF
END IF

IF ((ModifiedCount(dw_professor) > 0) OR (DeletedCount(dw_professor) > 0)) THEN
   DeleteRow(dw_professor, 1)
   IF ((Update(dw_professor) = 1)) THEN
      COMMIT;
   ELSE
      ROLLBACK;
   END IF
END IF

dwShareDataOff(dw_professor)

close(w_maint_main)

TriggerEvent(uo_prof_main, "getcontrolagain")

End of Script



Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_ok

End of Script
```

```
CommandButton: cb_cancel
X = 2058            Y = 1601            Width = 247         Height = 109
TabOrder = 120      Visible = true      Text = "&Cancel"

Script for: clicked  event
//Exits the window without saving any changes back to the database.

dwShareDataOff(dw_professor)

close(w_maint_main)

End of Script


Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_cancel

End of Script


CommandButton: cb_reset
X = 1495            Y = 1601            Width = 247         Height = 109
TabOrder = 110      Visible = true      Text = "&Reset"

Script for: clicked  event
```

Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:32:19

```
//was entered and before changed (yet not) updated data is modified.

//Local Variables
Integer     lv_i_Row
//End Local Variables

IF (cb_add.enabled) THEN
   Reset(dw_prof_info_add)
   InsertRow(dw_prof_info_add, 0)
   ScrollToRow(dw_prof_info_add, 1)
   SetFocus(dw_prof_info_add)
   SetColumn(dw_prof_info_add, "last_name")

   lv_i_Row = dwFind(dw_time, "time_type = " + '"' + '"', 0, RowCount(dw_time))
   IF (lv_i_Row = 0) THEN
      InsertRow(dw_time, 1)
      ScrollToRow(dw_time, 1)
   ELSE
      ScrollToRow(dw_time, lv_i_Row)
   END IF

   //Reset the structure values
   s_InfoParms.first_time = TRUE
   s_InfoParms.class_preference_1 = 0
   s_InfoParms.class_preference_2 = 0
   s_InfoParms.class_preference_3 = 0
   s_InfoParms.class_preference_4 = 0
   s_InfoParms.previous_class_1 = 0
   s_InfoParms.previous_class_2 = 0
   s_InfoParms.previous_class_3 = 0
   s_InfoParms.previous_class_4 = 0
   s_InfoParms.chair = ""
   s_InfoParms.priority = 0
   s_InfoParms.degree_earned = ""
   s_InfoParms.yrs_csbsju = 0
   s_InfoParms.tenured = ""
```

```
   cb_more.enabled   =  FALSE
   cb_reset.enabled  =  FALSE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add

   Return
END IF

SetRedraw(dw_prof_info_xref, FALSE)
SetRedraw(dw_prof_info_add, FALSE)
SetRedraw(dw_prof_info_update, FALSE)

SelectRow(dw_prof_info_xref, 0, FALSE)

Reset(dw_prof_info_update)
InsertRow(dw_prof_info_update, 0)
ScrollToRow(dw_prof_info_update, 1)

lv_i_Row = dwFind(dw_time, "time_type = " + '"' + '"', 0, RowCount(dw_time))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_time, 1)
   ScrollToRow(dw_time, 1)
ELSE
   ScrollToRow(dw_time, lv_i_Row)
END IF

dw_prof_info_update.visible   =  FALSE
dw_prof_info_add.visible      =  TRUE

dw_prof_info_add.enabled      =  TRUE
dw_prof_info_update.enabled   =  FALSE
dw_prof_info_xref.enabled     =  TRUE

//Reset the structure values
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

s_InfoParms.first_time = TRUE
s_InfoParms.class_preference_1 = 0
s_InfoParms.class_preference_2 = 0
s_InfoParms.class_preference_3 = 0
s_InfoParms.class_preference_4 = 0
s_InfoParms.previous_class_1 = 0
s_InfoParms.previous_class_2 = 0
s_InfoParms.previous_class_3 = 0
s_InfoParms.previous_class_4 = 0
s_InfoParms.chair = ""
s_InfoParms.priority = 0
s_InfoParms.degree_earned = ""
s_InfoParms.yrs_csbsju = 0
s_InfoParms.tenured = ""

iv_b_ChangesMade = FALSE

SetRedraw(dw_prof_info_update, TRUE)
SetRedraw(dw_prof_info_add, TRUE)
SetRedraw(dw_prof_info_xref, TRUE)

//Command Button Control
cb_reset.enabled      =  FALSE
cb_add.enabled        =  TRUE
iv_cb_CurrentDefault.default  =  FALSE
cb_add.default        =  TRUE
iv_cb_CurrentDefault =  cb_add
cb_select.enabled     =  FALSE
cb_delete.enabled     =  FALSE
cb_update.enabled     =  FALSE
cb_more.enabled       =  FALSE

SetFocus(dw_prof_info_add)

End of Script
```

```
Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_reset

End of Script
```

```
CommandButton: cb_update
X = 1166            Y = 1601            Width = 247         Height = 109
TabOrder = 100      Visible = true      Text = "&Update"

Script for: clicked  event
//Gets all data from the prof_info_update datawindow and updates the prof_info_xref datawindow.
//Returns the user object back to add mode.

//Local Variables
Integer     lv_i_Row
String      lv_s_LastName
String      lv_s_FirstName
String      lv_s_Name
String      lv_s_Active
String      lv_s_EmpType
String      lv_s_TimePreference
//End Local Variables

SetPointer(Hourglass!)
```

```
AcceptText(dw_prof_info_update)

lv_i_Row =  GetSelectedRow(iv_dwc_time, 0)

lv_s_LastName        =  Trim(GetItemString(dw_prof_info_update, 1, "last_name"))
lv_s_FirstName       =  Trim(GetItemString(dw_prof_info_update, 1, "first_name"))
lv_s_Active          =  Trim(GetItemString(dw_prof_info_update, 1, "active"))
lv_s_EmpType         =  Trim(GetItemString(dw_prof_info_update, 1, "emp_type"))
lv_s_TimePreference  =  Trim(GetItemString(iv_dwc_time, lv_i_Row, "time_type"))

lv_s_Name   =  lv_s_LastName + ", " + lv_s_FirstName

SetItem(dw_prof_info_xref, iv_i_UpdateRow, "name", lv_s_Name)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "active", lv_s_Active)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "emp_type", lv_s_EmpType)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "time_preference", lv_s_TimePreference)

SetItem(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_1", s_InfoParms.class_preference_1)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_2", s_InfoParms.class_preference_2)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_3", s_InfoParms.class_preference_3)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_4", s_InfoParms.class_preference_4)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_1", s_InfoParms.previous_class_1)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_2", s_InfoParms.previous_class_2)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_3", s_InfoParms.previous_class_3)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_4", s_InfoParms.previous_class_4)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "priority", s_InfoParms.priority)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "tenured", s_InfoParms.tenured)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "yrs_at_csbsju", s_InfoParms.yrs_csbsju)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "high_degree_earned", s_InfoParms.degree_earned)
SetItem(dw_prof_info_xref, iv_i_UpdateRow, "chair", s_InfoParms.chair)

dw_prof_info_xref = calculate_priority(dw_prof_info_xref)
SetSort(dw_prof_info_xref, "name A")
Sort(dw_prof_info_xref)

//Reset the structure values
```

```
s_InfoParms.first_time = TRUE
s_InfoParms.class_preference_1 = 0
s_InfoParms.class_preference_2 = 0
s_InfoParms.class_preference_3 = 0
s_InfoParms.class_preference_4 = 0
s_InfoParms.previous_class_1 = 0
s_InfoParms.previous_class_2 = 0
s_InfoParms.previous_class_3 = 0
s_InfoParms.previous_class_4 = 0
s_InfoParms.chair = ""
s_InfoParms.priority = 0
s_InfoParms.degree_earned = ""
s_InfoParms.yrs_csbsju = 0
s_InfoParms.tenured = ""

//Reset the drop down datawindow
lv_i_Row = dwFind(dw_time, "time_type = " + '"' + '"', 0, RowCount(dw_time))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_time, 1)
   ScrollToRow(dw_time, 1)
ELSE
   ScrollToRow(dw_time, lv_i_Row)
END IF

SetRedraw(dw_prof_info_xref, FALSE)
SetRedraw(dw_prof_info_add, FALSE)
SetRedraw(dw_prof_info_update, FALSE)

SelectRow(dw_prof_info_xref, 0, FALSE)

Reset(dw_prof_info_update)
InsertRow(dw_prof_info_update, 0)
ScrollToRow(dw_prof_info_update, 1)

dw_prof_info_update.visible   =  FALSE
dw_prof_info_add.visible      =  TRUE
```

```
dw_prof_info_update.enabled   =  FALSE
dw_prof_info_add.enabled      =  TRUE

SetFocus(dw_prof_info_add)

//Command Button Control
cb_more.enabled   =  FALSE
cb_add.enabled    =  TRUE
iv_cb_CurrentDefault.default  =  FALSE
cb_add.default    =  TRUE
iv_cb_CurrentDefault =  cb_add
cb_select.enabled =  FALSE
cb_delete.enabled =  FALSE
cb_update.enabled =  FALSE
cb_reset.enabled  =  FALSE
cb_cancel.enabled =  TRUE

iv_b_ChangesMade = FALSE

SetRedraw(dw_prof_info_xref, TRUE)
SetRedraw(dw_prof_info_add, TRUE)
SetRedraw(dw_prof_info_update, TRUE)

End of Script



Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

iv_cb_CurrentDefault =  cb_update

End of Script


CommandButton: cb_delete
X = 837             Y = 1601            Width = 247         Height = 109
TabOrder = 90       Visible = true      Text = "&Delete"

Script for: clicked  event
//Deletes the selected row in the prof_info_xref datawindow after the user verifies the deletion.

//Local Variables
Integer     lv_i_Row
String      lv_s_Name
String      lv_s_FindString
//End Local Variables

//Capture the row number to delete.
lv_i_Row = GetSelectedRow(dw_prof_info_xref, 0)

//Ensure a row has been selected prior to deletion.
IF (lv_i_Row = 0) THEN
   MessageBox("Information", "A row must be selected before deleting.", Information!, OK!)
   Return
END IF

IF (MessageBox("Information", "Delete current row?", Question!, YesNo!, 2) = 1) THEN
   lv_s_Name   =  Trim(GetItemString(dw_prof_info_xref, lv_i_Row, "name"))

   DeleteRow(dw_prof_info_xref, lv_i_Row)

   lv_s_FindString   =  "name_combined = " + '"' + lv_s_Name + '"'
   lv_i_Row =  dwFind(dw_professor, lv_s_FindString, 0, RowCount(dw_professor))
```

```
   DeleteRow(dw_professor, lv_i_Row)

   dw_prof_info_add.enabled      =  TRUE
   dw_prof_info_update.enabled   =  FALSE

   //Command Button Control
   cb_add.enabled    =  TRUE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default    =  TRUE
   iv_cb_CurrentDefault =  cb_add
   cb_select.enabled =  FALSE
   cb_delete.enabled =  FALSE
   cb_update.enabled =  FALSE
   cb_reset.enabled  =  FALSE
   cb_cancel.enabled =  TRUE

   SetFocus(dw_prof_info_add)
END IF

End of Script



Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_delete

End of Script
```

```
CommandButton: cb_add
X = 119             Y = 1601            Width = 247         Height = 109
TabOrder = 70       Visible = true      Enabled = true      Text = "&Add"
Default = true

Script for: clicked  event
//Gets and information from the prof_info_add datawindow and set the information into
//the prof_info_xref window along with the faculty member structure information.

//Local Variables
Integer     lv_i_InsertedRow
Integer     lv_i_Row
Integer     lv_i_FoundRow
String      lv_s_LastName
String      lv_s_FirstName
String      lv_s_Name
String      lv_s_Active
String      lv_s_EmpType
String      lv_s_TimePreference
String      lv_s_FindString
String      lv_s_FilterString
//End Local Variables

SetPointer(Hourglass!)

AcceptText(dw_prof_info_add)

lv_i_Row =  GetSelectedRow(iv_dwc_time, 0)

//Retrieve information entered.
lv_s_LastName        =  Trim(GetItemString(dw_prof_info_add, 1, "last_name"))
lv_s_FirstName       =  Trim(GetItemString(dw_prof_info_add, 1, "first_name"))
lv_s_Active          =  Trim(GetItemString(dw_prof_info_add, 1, "active"))
lv_s_EmpType         =  Trim(GetItemString(dw_prof_info_add, 1, "emp_type"))
```

```
lv_s_TimePreference  =  Trim(GetItemString(iv_dwc_time, lv_i_Row, "time_type"))

//Validation
IF (IsNull(lv_s_LastName) OR (lv_s_LastName = "")) THEN
MessageBox("Validation Error", "A last name must be entered prior to adding the faculty member.", StopS
ign!, OK!)
   SetFocus(dw_prof_info_add)
   SetColumn(dw_prof_info_add, "last_name")
   Return
ELSEIF (IsNull(lv_s_FirstName) OR (lv_s_FirstName = "")) THEN
MessageBox("Validation Error", "A first name must be entered prior to adding the faculty member.", Stop
Sign!, OK!)
   SetFocus(dw_prof_info_add)
   SetColumn(dw_prof_info_add, "first_name")
   Return
ELSEIF (IsNull(lv_s_Active) OR (lv_s_Active = "")) THEN
MessageBox("Validation Error", "The Active field must be entered prior to adding the faculty member.",
StopSign!, OK!)
   SetFocus(dw_prof_info_add)
   SetColumn(dw_prof_info_add, "active")
   Return
ELSEIF (IsNull(lv_s_EmpType) OR (lv_s_EmpType = "")) THEN
MessageBox("Validation Error", "The employment classification must be entered prior to adding the facul
ty member.", StopSign!, OK!)
   SetFocus(dw_prof_info_add)
   SetColumn(dw_prof_info_add, "emp_type")
   Return
ELSEIF (IsNull(lv_s_TimePreference) OR (lv_s_TimePreference = "")) THEN
MessageBox("Validation Error", "A time preference must be selected prior to adding the faculty member."
, StopSign!, OK!)
   SetFocus(dw_time)
   SetColumn(dw_time, "time_preference")
   Return
END IF

lv_s_Name    =  lv_s_LastName + ", " + lv_s_FirstName
```

```
//Add information into xref window.
SetRedraw(dw_prof_info_xref, FALSE)

lv_s_FindString = "name = " + '"' + lv_s_Name + '"'

IF (dwFind(dw_prof_info_xref, lv_s_FindString, 0, RowCount(dw_prof_info_xref)) > 0) THEN
MessageBox("Validation Error", "This faculty member already exist.  If you wish to make changes, select
 record and update.", &
        Information!, OK!)
   SetRedraw(dw_prof_info_xref, TRUE)
   SetFocus(dw_prof_info_add)
   Return
END IF

lv_i_InsertedRow = InsertRow(dw_prof_info_xref, 0)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "department", s_MainParms.department)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "name", lv_s_Name)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "active", lv_s_Active)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "emp_type", lv_s_EmpType)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "time_preference", lv_s_TimePreference)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "class_preference_1", s_InfoParms.class_preference_1)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "class_preference_2", s_InfoParms.class_preference_2)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "class_preference_3", s_InfoParms.class_preference_3)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "class_preference_4", s_InfoParms.class_preference_4)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "previous_class_1", s_InfoParms.previous_class_1)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "previous_class_2", s_InfoParms.previous_class_2)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "previous_class_3", s_InfoParms.previous_class_3)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "previous_class_4", s_InfoParms.previous_class_4)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "priority", s_InfoParms.priority)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "tenured", s_InfoParms.tenured)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "yrs_at_csbsju", s_InfoParms.yrs_csbsju)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "high_degree_earned", s_InfoParms.degree_earned)
SetItem(dw_prof_info_xref, lv_i_InsertedRow, "chair", s_InfoParms.chair)

dw_prof_info_xref = calculate_priority(dw_prof_info_xref)
```

```
//add name to invisible datawindow -- shares data with faculty member dddw in uo_prof_main
lv_s_FilterString = "name_combined = " + '"' + lv_s_Name + '"'
lv_i_FoundRow = dwFind(dw_professor, lv_s_FilterString, 0, RowCount(dw_professor))
IF (lv_i_FoundRow = 0) THEN
   lv_i_InsertedRow = InsertRow(dw_professor, 0)
   SetItem(dw_professor, lv_i_InsertedRow, "name_combined", lv_s_Name)
   SetSort(dw_professor, "name_combined A")
   Sort(dw_professor)
END IF

SelectRow(dw_prof_info_xref, 0, FALSE)
SetSort(dw_prof_info_xref, "name A")
Sort(dw_prof_info_xref)

//Don't think this will work ... but what the heck ... Did it?? What was it supposed to accomplish?
lv_i_InsertedRow = GetSelectedRow(dw_prof_info_xref, 0)
ScrollToRow(dw_prof_info_xref, lv_i_InsertedRow)

SetRedraw(dw_prof_info_add, FALSE)

Reset(dw_prof_info_add)
InsertRow(dw_prof_info_add, 0)
ScrollToRow(dw_prof_info_add, 1)

lv_i_Row = dwFind(dw_time, "time_type = " + '"' + '"', 0, RowCount(dw_time))
IF (lv_i_Row = 0) THEN
   InsertRow(dw_time, 1)
   ScrollToRow(dw_time, 1)
ELSE
   ScrollToRow(dw_time, lv_i_Row)
END IF

SetFocus(dw_prof_info_add)

SetRedraw(dw_prof_info_xref, TRUE)
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

SetRedraw(dw_prof_info_add, TRUE)

//Reset the structure values
s_InfoParms.first_time = TRUE
s_InfoParms.class_preference_1 = 0
s_InfoParms.class_preference_2 = 0
s_InfoParms.class_preference_3 = 0
s_InfoParms.class_preference_4 = 0
s_InfoParms.previous_class_1 = 0
s_InfoParms.previous_class_2 = 0
s_InfoParms.previous_class_3 = 0
s_InfoParms.previous_class_4 = 0
s_InfoParms.chair = ""
s_InfoParms.priority = 0
s_InfoParms.degree_earned = ""
s_InfoParms.yrs_csbsju = 0
s_InfoParms.tenured = ""

iv_b_ChangesMade = FALSE

//Command Button Control
cb_reset.enabled  =  FALSE
cb_more.enabled   =  FALSE
cb_cancel.enabled =  TRUE



End of Script



Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables
```

Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:32:19

```
//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_add

End of Script
```

CommandButton: cb_select

X = 449	Y = 1601	Width = 307	Height = 109
TabOrder = 80	Visible = true	Text = "&Select"	

```
Script for: clicked  event
//Triggers the "doubleclicked" event of the prof_info_xref datawindow.

//Local Variables

//End Local Variables

TriggerEvent(dw_prof_info_xref, "DoubleClicked")

End of Script


Script for: lbuttondown  event
//Used to keep track of the default button.

//Local Variables

//End Local Variables

iv_cb_CurrentDefault.default = FALSE
iv_cb_CurrentDefault =  cb_select
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19


End of Script



DataWindow: dw_prof_info_add
X = 37              Y = 237             Width = 1829        Height = 109
TabOrder = 30       Visible = true      Enabled = true      DataObject = "d_prof_info_add"
LiveScroll = true   BorderStyle = stylebox!

Script for: editchanged  event
//After any data is entered into the datawindow the more and reset command buttons are enabled.

//Local Variables

//End Local Variables

cb_more.enabled   =  TRUE
cb_reset.enabled  =  TRUE

SelectRow(dw_prof_info_xref, 0, FALSE)

cb_select.enabled =  FALSE
cb_delete.enabled =  FALSE

End of Script



Script for: dwnkey  event
//Attempts to control tabbing.

//Local Variables
String      lv_s_CurrentColumn
Boolean     lv_defaults[8]
//End Local Variables
```

```
lv_s_CurrentColumn = GetColumnName(dw_prof_info_add)

IF (KeyDown(keyTab!) AND KeyDown(keyShift!) AND (lv_s_CurrentColumn = "course_number")) THEN
   iv_b_TabDone    =  TRUE
   SetFocus(cb_ok)
   Return
ELSEIF (KeyDown(keyTab!) AND (lv_s_CurrentColumn = "emp_type")) THEN
   iv_b_TabDone    =  TRUE
   IF (dw_time.enabled) THEN
      SetFocus(dw_time)
      Return
   ELSEIF (cb_more.enabled) THEN
      iv_cb_CurrentDefault.default  =  FALSE
      cb_more.default    =  TRUE
      iv_cb_CurrentDefault = cb_more
      SetFocus(cb_more)
      Return
   ELSEIF (cb_add.enabled) THEN
      SetFocus(cb_add)
      Return
   ELSEIF (cb_select.enabled) THEN
      SetFocus(cb_select)
      Return
   ELSEIF (cb_delete.enabled) THEN
      SetFocus(cb_delete)
      Return
   ELSEIF (cb_update.enabled) THEN
      SetFocus(cb_update)
      Return
   ELSEIF (cb_reset.enabled) THEN
      SetFocus(cb_reset)
      Return
   ELSEIF (cb_cancel.enabled) THEN
      SetFocus(cb_cancel)
      Return
```

```
   ELSEIF (cb_ok.enabled) THEN
      SetFocus(cb_ok)
      Return
   ELSE
      Return
   END IF
END IF

End of Script


DataWindow: dw_prof_info_xref
X = 23              Y = 473             Width = 2721        Height = 1053
TabOrder = 50       Visible = true      Enabled = true      DataObject = "d_prof_info"
VScrollBar = true   Border = true       LiveScroll = true   BorderStyle = stylebox!

Script for: clicked  event
//Selects the clicked row and enables/disables the appropriate command buttons.

//Local Variables
Integer     lv_i_SelectedRow
//End Local Variables

iv_i_Row = GetClickedRow(dw_prof_info_xref)

IF (iv_i_Row < 1) THEN
   Return
END IF

lv_i_SelectedRow = GetSelectedRow(dw_prof_info_xref, 0)
IF (iv_i_Row = lv_i_SelectedRow) THEN
   SelectRow(dw_prof_info_xref, 0, FALSE)

   cb_delete.enabled =  FALSE
   cb_add.enabled    =  TRUE
```

```
   iv_cb_CurrentDefault.default  =  FALSE
   cb_add.default     =  TRUE
   iv_cb_CurrentDefault =  cb_add
   cb_reset.enabled  =  FALSE
   cb_update.enabled =  FALSE
   cb_select.enabled =  FALSE

   IF (iv_b_ChangesMade) THEN
      IF (MessageBox("Changes Made", "Do you wish to save changes?", Question!, YesNo!) = 1) THEN
         TriggerEvent(cb_update, "clicked")
      ELSE
         iv_b_ChangesMade = FALSE
      END IF
   END IF

   SetRedraw(dw_prof_info_add, FALSE)
   SetRedraw(dw_prof_info_update, FALSE)

   Reset(dw_prof_info_update)

   InsertRow(dw_prof_info_update, 0)
   ScrollToRow(dw_prof_info_update, 1)

   dw_prof_info_add.visible      =  TRUE
   dw_prof_info_update.visible   =  FALSE
   dw_prof_info_add.enabled      =  TRUE
   dw_prof_info_update.enabled   =  FALSE

   SetRedraw(dw_prof_info_add, TRUE)
   SetRedraw(dw_prof_info_update, TRUE)

   SetFocus(dw_prof_info_add)
ELSE
   SelectRow(dw_prof_info_xref, 0, FALSE)
   SelectRow(dw_prof_info_xref, iv_i_Row, TRUE)
```

```
   IF (cb_add.enabled) THEN
      SetRedraw(dw_prof_info_add, FALSE)
      dw_prof_info_add.enabled   =  FALSE

      Reset(dw_prof_info_add)
      InsertRow(dw_prof_info_add, 0)
      ScrollToRow(dw_prof_info_add, 1)

      SetRedraw(dw_prof_info_add, TRUE)
   END IF

   //Command Button Control
   cb_delete.enabled =  TRUE
   iv_cb_CurrentDefault.default  =  FALSE
   cb_select.default    =  TRUE
   iv_cb_CurrentDefault =  cb_select
   cb_add.enabled    =  FALSE
   cb_reset.enabled  =  TRUE
   cb_select.enabled =  TRUE
END IF

End of Script
```

```
Script for: doubleclicked  event
//Verifies that no changes have been made if data exists in update mode.  Highlights the
//clicked row and gets all information regarding the faculty member and fills the prof_info_update
//datawindow and professor structure and goes into update mode.

//Local Variables
Char        lv_c_Name[35]
Char        lv_c_LastName[20]
Char        lv_c_FirstName[15]
Integer     lv_i_ArrayIndex
Integer     lv_i_Loop
```

Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:32:19

```
Integer     lv_i_Length
Integer     lv_i_NameLength
Integer     lv_i_FindRow
String      lv_s_Name
String      lv_s_FirstName
String      lv_s_LastName
String      lv_s_Active
String      lv_s_EmpType
String      lv_s_TimePreference
String      lv_s_FindTime
//End Local Variables

IF (iv_i_Row < 1) THEN
   SetFocus(dw_prof_info_add)
   Return
END IF

//Should be taken care of by clicked event ....
IF (iv_b_ChangesMade) THEN
   IF (MessageBox("Changes Made", "Do you wish to save changes?", Question!, YesNo!) = 1) THEN
      TriggerEvent(cb_update, "clicked")
   ELSE
      iv_b_ChangesMade = FALSE
   END IF
END IF

SetRedraw(dw_prof_info_update, FALSE)
SetRedraw(dw_prof_info_add, FALSE)

dw_prof_info_update.enabled    =  TRUE
dw_prof_info_add.enabled       =  FALSE

dw_prof_info_update.visible    =  TRUE
dw_prof_info_add.visible       =  FALSE

Reset(dw prof info add)
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

InsertRow(dw_prof_info_add, 0)
ScrollToRow(dw_prof_info_add, 1)

Reset(dw_prof_info_update)
InsertRow(dw_prof_info_update, 0)
ScrollToRow(dw_prof_info_update, 1)

iv_i_UpdateRow = iv_i_Row

lv_s_Name            =  Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "name"))
lv_s_Active          =  Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "active"))
lv_s_EmpType         =  Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "emp_type"))
lv_s_TimePreference  =  Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "time_preference"))

lv_c_Name    =  lv_s_Name
lv_i_NameLength    =  Len(lv_c_Name)
lv_i_Length =  last_name_length(lv_s_Name)

lv_i_ArrayIndex    =  1
FOR lv_i_Loop = lv_i_Length + 3 TO lv_i_NameLength
   lv_c_FirstName[lv_i_ArrayIndex]   =  lv_c_Name[lv_i_Loop]
   lv_i_ArrayIndex    =  lv_i_ArrayIndex + 1
NEXT
lv_c_FirstName[lv_i_ArrayIndex]   =  Char(0)

lv_i_ArrayIndex    =  1
FOR lv_i_Loop = 1 TO lv_i_Length
   lv_c_LastName[lv_i_ArrayIndex] = lv_c_Name[lv_i_Loop]
   lv_i_ArrayIndex    =  lv_i_ArrayIndex + 1
NEXT
lv_c_LastName[lv_i_ArrayIndex]    =  Char(0)

lv_s_FirstName =  lv_c_FirstName
lv_s_LastName  =  lv_c_LastName

SetItem(dw_prof_info_update, 1, "last_name", lv_s_LastName)
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

SetItem(dw_prof_info_update, 1, "first_name", lv_s_FirstName)
SetItem(dw_prof_info_update, 1, "active", lv_s_Active)
SetItem(dw_prof_info_update, 1, "emp_type", lv_s_EmpType)

lv_s_FindTime = "time_type = " + '"' + lv_s_TimePreference + '"'
lv_i_FindRow = dwFind(dw_time, lv_s_FindTime, 0, RowCount(dw_time))

IF (lv_i_FindRow > 0) THEN
   ScrollToRow(dw_time, lv_i_FindRow)
END IF

s_InfoParms.add_mode              =  FALSE
s_InfoParms.first_time            =  FALSE
s_InfoParms.class_preference_1=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_1"
)
s_InfoParms.class_preference_2=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_2"
)
s_InfoParms.class_preference_3=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_3"
)
s_InfoParms.class_preference_4=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "class_preference_4"
)
s_InfoParms.previous_class_1=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_1")

s_InfoParms.previous_class_2=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_2")

s_InfoParms.previous_class_3=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_3")

s_InfoParms.previous_class_4=GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "previous_class_4")

s_InfoParms.chair                 =  Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "chair"))
s_InfoParms.priority              =  GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "priority")
s_InfoParms.degree_earned=Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "high_degree_e
arned"))
s_InfoParms.yrs_csbsju            =  GetItemNumber(dw_prof_info_xref, iv_i_UpdateRow, "yrs_at_csbsju")
s_InfoParms.tenured               =  Trim(GetItemString(dw_prof_info_xref, iv_i_UpdateRow, "tenured"))
```

```
Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:32:19

SelectRow(dw_prof_info_xref, 0, FALSE)
SelectRow(dw_prof_info_xref, iv_i_UpdateRow, TRUE)

//Command Button Control
cb_more.enabled    =  TRUE
cb_add.enabled     =  FALSE
cb_delete.enabled  =  FALSE
cb_update.enabled  =  FALSE
cb_reset.enabled   =  TRUE
iv_cb_CurrentDefault.default  =  FALSE
cb_reset.default      =  TRUE
iv_cb_CurrentDefault  =  cb_reset
cb_select.enabled  =  FALSE

iv_b_ChangesMade = FALSE

SetFocus(dw_prof_info_update)
SetColumn(dw_prof_info_update, "active")

SetRedraw(dw_prof_info_add, TRUE)
SetRedraw(dw_prof_info_update, TRUE)

End of Script


Line: ln_1
BeginX = 33          BeginY = 361         EndX = 2743          EndY = 361
Visible = true       LineColor = 33554432                      LineStyle = continuous!
LineThickness = 5


Line: ln_2
BeginX = 33          BeginY = 65          EndX = 2743          EndY = 65
Visible = true       LineColor = 33554432                      LineStyle = continuous!
LineThickness = 5
```

Window: uo_prof_maint
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:32:19

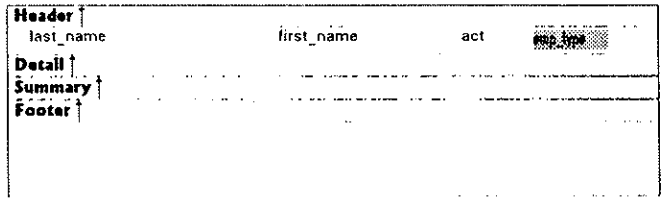
Line: ln_3
BeginX = 33 BeginY = 69 EndX = 33 EndY = 365
Visible = true LineColor = 33554432 LineStyle = continuous!
LineThickness = 5

Line: ln_4
BeginX = 2739 BeginY = 69 EndX = 2739 EndY = 365
Visible = true LineColor = 33554432 LineStyle = continuous!
LineThickness = 5

DataWindow: d_prof_info_add

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:25:10



```
DataWindow: d_prof_info_add
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:25:10

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: last_name
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: first_name
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: active
```

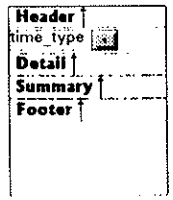
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 30
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: emp_type
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 40
Initial Value: None
Edit Style: Edit
Edit limit: 0

DataWindow: d_time_dddw

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:12:01

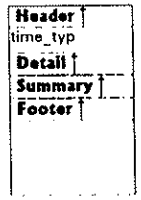


```
DataWindow: d_time_dddw
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:12:01

Retrieve: PBSELECT(TABLE(NAME="time_xref" ) COLUMN(NAME="time_xref.time_type"))
Arguments: None
Update Table: time_xref
Filter: None
Sort: None
Sparse: None
Column: time_type
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: DropDownDataWindow
      Name:    d_time_list
      Data Column:    time_type
      Display Column:    time_type
```

DataWindow: d_time_list

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:10:24



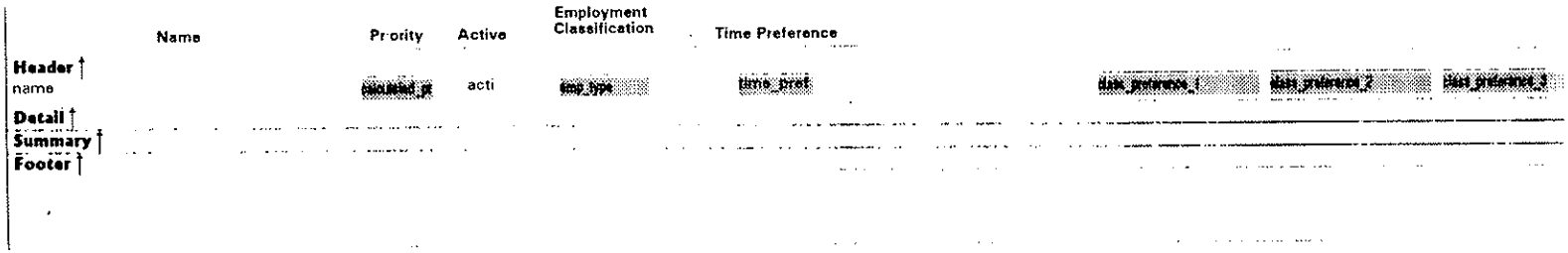
DataWindow: d_time_list
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:10:24

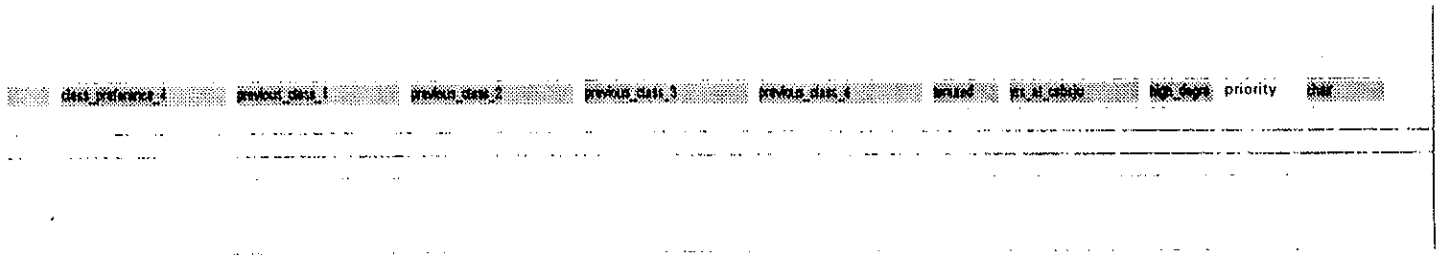
Retrieve: PBSELECT(TABLE(NAME="time_xref") COLUMN(NAME="time_xref.time_type"))
Arguments: None
Update Table: time_xref
Filter: None
Sort: None
Sparse: None
Column: time_type
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 7

DataWindow: d_prof_info

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:26:39




priority

Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Retrieve: PBSELECT(TABLE(NAME="professor_information") COLUMN(NAME="professor_information.department") C
Arguments: arg_s_department
Update Table: professor_information
Filter: None
Sort: None
Sparse: None
Column: class_preference_1
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: class_preference_2
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0

```
    Edit Style: Edit
    Edit limit: 0
Column: class_preference_3
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: class_preference_4
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: previous_class_1
```

DataWindow: d_prof_into
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: previous_class_2
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: previous_class_3
Updateable: Yes
Key: No
Format: "[general]"
Border style: None

DataWindow: d_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: previous_class_4
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: tenured
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None

DataWindow: d_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Edit limit: 0
Column: yrs_at_csbsju
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: high_degree_earned
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: priority
Updateable: Yes

DataWindow: d_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: chair
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: name
Updateable: Yes
Key: Yes
Format: "[general]"
Border style: None
Validation: None

DataWindow: d_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 35
Column: calculated_priority
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: active
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit

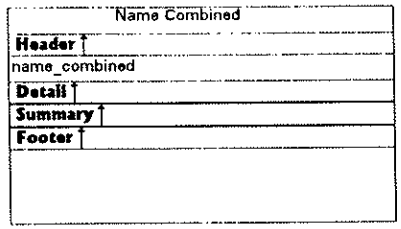
DataWindow: d_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:26:39

Column: emp_type
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: time_preference
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 7

DataWindow: d_professor

Library: e:\thesis\appl\schedule.pbl

Date: 5/3/95 Time: 23:26:31



```
DataWindow: d_professor
Library: e:\thesis\appl\schedule.pbl
Date: 5/3/95   Time: 23:26:31

Retrieve: PBSELECT(TABLE(NAME="professor_xref" ) COLUMN(NAME="professor_xref.name_combined"))
Arguments: None
Update Table: professor_xref
Filter: None
Sort: None
Sparse: None
Column: name_combined
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 35
```

```
Function : last_name_length

//Given a name (last name, first name) will determine the length
//of the last name so the name can be broken down into first and
//last names.

//Function variables
Char        fv_c_NameArray[35]
Integer     fv_i_NameLength
Integer     fv_i_LastNameLength
Integer     fv_i_LoopIndex
//End Function variables

fv_i_NameLength      =  Len(arg_name)
fv_c_NameArray       =  arg_name
fv_i_LastNameLength  =  0

IF (fv_i_NameLength > 0) THEN
   FOR fv_i_LoopIndex = 1 TO fv_i_NameLength
      IF (fv_c_NameArray[fv_i_LoopIndex] = ",") THEN
         EXIT
      ELSE
         fv_i_LastNameLength = fv_i_LastNameLength + 1
      END IF
   NEXT
END IF

Return fv_i_LastNameLength
```

```
Function : calculate_priority

//This function is passed a datawindow containing the professor information.
//It will recalculate the calculated priority field for the department.

//Local Variables
Integer     lv_i_FirstPriority
Integer     lv_i_Loop
Integer     lv_i_NumberOfProfessors
Integer     lv_i_Priority
Integer     lv_i_CurrentPriority
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentOtherInfo
Integer     lv_i_CurrentPriorityInfo
String      lv_s_FilterString
//End Local Variables

lv_s_FilterString = "active = 'y'"

SetFilter(fv_dw_professors, lv_s_FilterString)
Filter(fv_dw_professors)

SetSort(fv_dw_professors, "priority A, tenured D, yrs_at_csbsju D, high_degree_earned D")
Sort(fv_dw_professors)

lv_i_NumberOfProfessors = RowCount(fv_dw_professors)

IF (lv_i_NumberOfProfessors <= 0) THEN
   Return(fv_dw_professors)
END IF

lv_i_CurrentPriority = 1
lv_i_FirstPriority = GetItemNumber(fv_dw_professors, 1, "priority")

//See if override priority can be used.  If the first line in datawindow <> 0 then override priorities ar
IF (lv_i_FirstPriority <> 0) THEN
   FOR lv_i_Loop = 1 to lv_i_NumberOfProfessors
      lv_i_Priority = GetItemNumber(fv_dw_professors, lv_i_Loop, "priority")
      SetItem(fv_dw_professors, lv_i_Loop, "calculated_priority", lv_i_Priority)
   NEXT
```

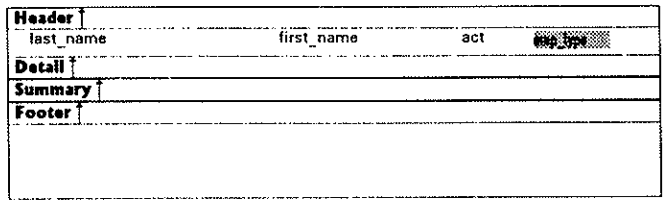
```
lv_i_CurrentProf = 2
DO UNTIL ((lv_i_Priority <> 0) OR (lv_i_CurrentProf = lv_i_NumberOfProfessors + 1))
   lv_i_Priority = GetItemNumber(fv_dw_professors, lv_i_CurrentProf, "priority")
   lv_i_CurrentProf = lv_i_CurrentProf + 1
LOOP
//All entries use other information (not override priority)
IF (lv_i_CurrentProf = lv_i_NumberOfProfessors + 1) THEN
   lv_i_CurrentPriority = 1
   FOR lv_i_Loop = 1 to lv_i_NumberOfProfessors
      SetItem(fv_dw_professors, lv_i_Loop, "calculated_priority", lv_i_CurrentPriority)
      lv_i_CurrentPriority = lv_i_CurrentPriority + 1
   NEXT
//Combination of both other information and override priority
ELSE
   lv_i_CurrentPriorityInfo = lv_i_CurrentProf - 1
   lv_i_CurrentOtherInfo = 1
   lv_i_CurrentPriority = 1
   DO UNTIL ((lv_i_CurrentPriorityInfo = lv_i_NumberOfProfessors + 1) AND (lv_i_CurrentOtherInfo = lv_
      lv_i_Loop = lv_i_CurrentPriority
      DO UNTIL ((lv_i_Loop = lv_i_Priority) OR (lv_i_CurrentOtherInfo = lv_i_CurrentProf - 1))
         SetItem(fv_dw_professors, lv_i_CurrentOtherInfo, "calculated_priority", lv_i_CurrentPriority)
         lv_i_CurrentPriority = lv_i_CurrentPriority + 1
         lv_i_CurrentOtherInfo = lv_i_CurrentOtherInfo + 1
         lv_i_Loop = lv_i_Loop + 1
      LOOP
      DO UNTIL (lv_i_Priority <> lv_i_CurrentPriority)
         SetItem(fv_dw_professors, lv_i_CurrentPriorityInfo, "calculated_priority", lv_i_CurrentPriori
         lv_i_CurrentPriority = lv_i_CurrentPriority + 1
         lv_i_CurrentPriorityInfo = lv_i_CurrentPriorityInfo + 1
         IF (lv_i_CurrentPriorityInfo <> lv_i_NumberOfProfessors + 1) THEN
            lv_i_Priority = GetItemNumber(fv_dw_professors, lv_i_CurrentPriorityInfo, "priority")
         END IF
      LOOP
      IF (lv_i_Loop = lv_i_CurrentProf) THEN
         FOR lv_i_Loop = lv_i_CurrentPriority TO lv_i_NumberOfProfessors
            SetItem(fv_dw_professors, lv_i_CurrentPriorityInfo, "calculated_priority", lv_i_CurrentPri
            lv_i_CurrentPriority = lv_i_CurrentPriority + 1
            lv_i_CurrentPriorityInfo = lv_i_CurrentPriorityInfo + 1
         NEXT
         //Done with calculating priorities
```

```
      LOOP
   END IF
END IF

Return fv_dw_professors
```

DataWindow: d_prof_info_update

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:20:07



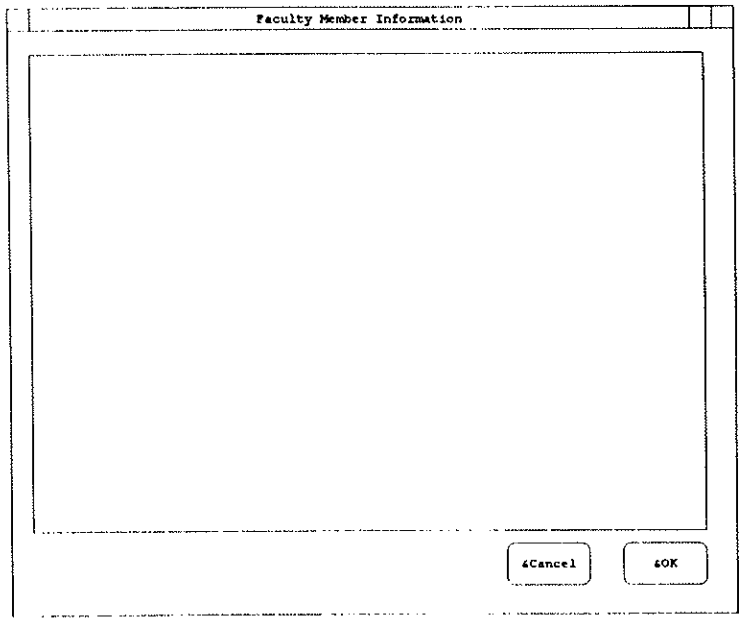
```
DataWindow: d_prof_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:20:07

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: last_name
     Format: "[general]"
     Border style: None
     Validation: None
     Validation Message: None
     Tab Sequence: 0
     Initial Value: None
     Edit Style: Edit
     Edit limit: 0
 Column: first_name
     Format: "[general]"
     Border style: None
     Validation: None
     Validation Message: None
     Tab Sequence: 0
     Initial Value: None
     Edit Style: Edit
     Edit limit: 0
 Column: active
```

DataWindow: d_prof_info_update
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:20:07

Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 10
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: emp_type
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 40
Initial Value: None
Edit Style: Edit
Edit limit: 0

Window: w_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:29:23



Window: w_more_prof_info

X = 1079	Y = 489	Width = 2158	Height = 1577
Visible = true	Enabled = true	TitleBar = true	Title = "Faculty Member Information"
ControlMenu = true	MinBox = true	MaxBox = true	Resizable = true
WindowType = main!	WindowState = normal!		BackColor = 12632256

Window: w_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:29:23

Instance Variables
s_prof_info_parms s_parms

End of Instance Variables

Script for: open event

```
//Adds a blank row into the datawindow.  If in update mode, sets data into the datawindow
//from the information in the structure.  If in add mode, the datawindow is empty.

//Local Variables
Boolean     lv_b_AddMode
Boolean     lv_b_FirstTime
//End Local Variables

s_parms = Message.PowerObjectParm

Reset(dw_prof_info)
InsertRow(dw_prof_info, 0)
ScrollToRow(dw_prof_info, 1)

lv_b_AddMode   =  s_parms.add_mode
lv_b_FirstTime =  s_parms.first_time

IF ((NOT lv_b_AddMode) OR (NOT lv_b_FirstTime)) THEN

   //Set the prof info dw
   SetItem(dw_prof_info, 1, "class_preference_1", s_parms.class_preference_1)
   SetItem(dw_prof_info, 1, "class_preference_2", s_parms.class_preference_2)
   SetItem(dw_prof_info, 1, "class_preference_3", s_parms.class_preference_3)
   SetItem(dw_prof_info, 1, "class_preference_4", s_parms.class_preference_4)
   SetItem(dw_prof_info, 1, "previous_class_1", s_parms.previous_class_1)
   SetItem(dw_prof_info, 1, "previous_class_2", s_parms.previous_class_2)
   SetItem(dw_prof_info, 1, "previous_class_3", s_parms.previous_class_3)
```

```
   SetItem(dw_prof_info, 1, "previous_class_4", s_parms.previous_class_4)
   SetItem(dw_prof_info, 1, "chair", s_parms.chair)
   SetItem(dw_prof_info, 1, "priority", s_parms.priority)
   SetItem(dw_prof_info, 1, "degree_earned", s_parms.degree_earned)
   SetItem(dw_prof_info, 1, "years_csbsju", s_parms.yrs_csbsju)
   SetItem(dw_prof_info, 1, "tenured", s_parms.tenured)
END IF

SetFocus(dw_prof_info)
SetColumn(dw_prof_info, "class_preference_1")


End of Script
```

CommandButton: cb_ok

X = 1820	Y = 1337	Width = 247	Height = 109
TabOrder = 30	Visible = true	Enabled = true	Text = "&OK"

Script for: clicked event

```
//Closes the window w_more_prof_info after storing the new or modified data into the structure
//that is returned to the command button more to be processed.

//Local Variables
Integer     lv_i_ClassPref1
Integer     lv_i_ClassPref2
Integer     lv_i_ClassPref3
Integer     lv_i_ClassPref4
Integer     lv_i_PrevClass1
Integer     lv_i_PrevClass2
Integer     lv_i_PrevClass3
Integer     lv_i_PrevClass4
Integer     lv_i_Priority
Integer     lv_i_Years
String      lv_s_Chair
```

```
Window: w_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 21:29:23

String      lv_s_Degree
String      lv_s_Tenured
//End Local Variables

lv_i_ClassPref1   =  GetItemNumber(dw_prof_info, 1, "class_preference_1")
lv_i_ClassPref2   =  GetItemNumber(dw_prof_info, 1, "class_preference_2")
lv_i_ClassPref3   =  GetItemNumber(dw_prof_info, 1, "class_preference_3")
lv_i_ClassPref4   =  GetItemNumber(dw_prof_info, 1, "class_preference_4")
lv_i_PrevClass1   =  GetItemNumber(dw_prof_info, 1, "previous_class_1")
lv_i_PrevClass2   =  GetItemNumber(dw_prof_info, 1, "previous_class_2")
lv_i_PrevClass3   =  GetItemNumber(dw_prof_info, 1, "previous_class_3")
lv_i_PrevClass4   =  GetItemNumber(dw_prof_info, 1, "previous_class_4")
lv_s_Chair        =  Trim(GetItemString(dw_prof_info, 1, "chair"))
lv_i_Priority     =  GetItemNumber(dw_prof_info, 1, "priority")
lv_s_Degree       =  Trim(GetItemString(dw_prof_info, 1, "degree_earned"))
lv_i_Years        =  GetItemNumber(dw_prof_info, 1, "years_csbsju")
lv_s_Tenured      =  Trim(GetItemString(dw_prof_info, 1, "tenured"))

//Validation
IF (IsNull(lv_i_ClassPref1)) THEN
MessageBox("Validation Error", "All class preferences must be entered before leaving.", StopSign!, OK!)

   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_1")
   Return
ELSEIF (lv_i_ClassPref1 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_1")
   Return
ELSEIF (IsNull(lv_i_ClassPref2)) THEN
MessageBox("Validation Error", "All class preferences must be entered before leaving.", StopSign!, OK!)

   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_2")
   Return
```

```
ELSEIF (lv_i_ClassPref2 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_2")
   Return
ELSEIF (IsNull(lv_i_ClassPref3)) THEN
MessageBox("Validation Error", "All class preferences must be entered before leaving.", StopSign!, OK!)

   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_3")
   Return
ELSEIF (lv_i_ClassPref3 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_3")
   Return
ELSEIF (IsNull(lv_i_ClassPref4)) THEN
MessageBox("Validation Error", "All class preferences must be entered before leaving.", StopSign!, OK!)

   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_4")
   Return
ELSEIF (lv_i_ClassPref4 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "class_preference_4")
   Return
ELSEIF (lv_i_PrevClass1 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "previous_class_1")
   Return
ELSEIF (lv_i_PrevClass2 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "previous_class_2")
```

Window: w_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:29:23

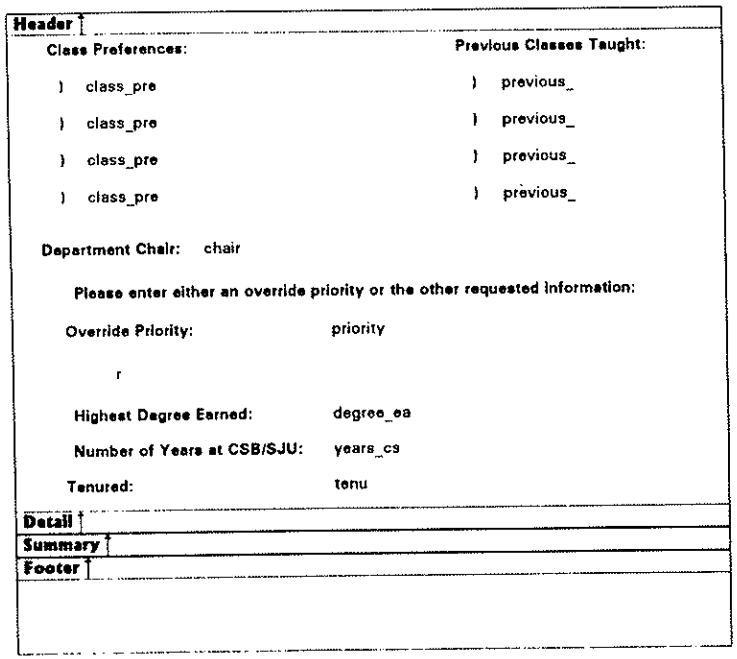
```
   Return
ELSEIF (lv_i_PrevClass3 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "previous_class_3")
   Return
ELSEIF (lv_i_PrevClass4 < 0) THEN
   MessageBox("Validation Error", "A course number is greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "previous_class_4")
   Return
ELSEIF (IsNull(lv_s_Chair) OR (lv_s_Chair = "")) THEN
MessageBox("Validation Error", "The department chair field must be entered before leaving.", StopSign!,
 OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "chair")
   Return
ELSEIF (IsNull(lv_i_Priority))   THEN
IF ((IsNull(lv_s_Degree) OR (lv_s_Degree = "")) AND (IsNull(lv_i_Years)) AND (IsNull(lv_s_Tenured) OR (
lv_s_Tenured = ""))) THEN
MessageBox("Validation Error", "Either the override priority or other information must be entered be
fore leaving.", StopSign!, OK!)
      SetFocus(dw_prof_info)
      SetColumn(dw_prof_info, "priority")
      Return
   ELSEIF (IsNull(lv_s_Degree) OR (lv_s_Degree = "")) THEN
MessageBox("Validation Error", "The highest degree earned must be entered before leaving.", StopSign
!, OK!)
      SetFocus(dw_prof_info)
      SetColumn(dw_prof_info, "degree_earned")
      Return
   ELSEIF (IsNull(lv_i_Years))   THEN
MessageBox("Validation Error", "The number of years at CSB/SJU must be entered before leaving.", Sto
pSign!, OK!)
      SetFocus(dw_prof_info)
      SetColumn(dw_prof_info, "years_csbsju")
```

```
      Return
   ELSEIF (IsNull(lv_s_Tenured) OR (lv_s_Tenured = "")) THEN
      MessageBox("Validation Error", "The tenured field must be entered before leaving.", StopSign!, OK!)
      SetFocus(dw_prof_info)
      SetColumn(dw_prof_info, "tenured")
      Return
   END IF
ELSEIF (lv_i_Priority < 0) THEN
   MessageBox("Validation Error", "The priority should be greater than zero.", StopSign!, OK!)
   SetFocus(dw_prof_info)
   SetColumn(dw_prof_info, "priority")
   Return
END IF

s_parms.first_time = FALSE
s_parms.class_preference_1 = lv_i_ClassPref1
s_parms.class_preference_2 = lv_i_ClassPref2
s_parms.class_preference_3 = lv_i_ClassPref3
s_parms.class_preference_4 = lv_i_ClassPref4
s_parms.previous_class_1 = lv_i_PrevClass1
s_parms.previous_class_2 = lv_i_PrevClass2
s_parms.previous_class_3 = lv_i_PrevClass3
s_parms.previous_class_4 = lv_i_PrevClass4
s_parms.chair = lv_s_Chair
s_parms.priority = lv_i_Priority
s_parms.degree_earned = lv_s_Degree
s_parms.yrs_csbsju = lv_i_Years
s_parms.tenured = lv_s_Tenured

PostEvent(uo_prof_maint.cb_more, "uponreturn")

CloseWithReturn(w_more_prof_info, s_parms)

End of Script
```

Window: w_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 21:29:23

```
CommandButton: cb_cancel
X = 1473            Y = 1337            Width = 247         Height = 109
TabOrder = 20       Visible = true      Enabled = true      Text = "&Cancel"
Default = true

Script for: clicked  event
//Closes window w_more_prof_info without setting the information into the structure to be returned.

close(w_more_prof_info)

End of Script


DataWindow: dw_prof_info
X = 65              Y = 65              Width = 2003        Height = 1241
TabOrder = 10       Visible = true      Enabled = true      DataObject = "d_more_prof_info"
LiveScroll = true   BorderStyle = stylebox!
```

DataWindow: d_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:30:24



```
DataWindow: d_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:30:24

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: class_preference_1
     Format: "[general]"
     Border style: Shadow Box
     Validation: None
     Validation Message: None
     Tab Sequence: 10
     Initial Value: None
     Edit Style: Edit
     Edit limit: 0
 Column: class_preference_2
     Format: "[general]"
     Border style: Shadow Box
     Validation: None
     Validation Message: None
     Tab Sequence: 20
     Initial Value: None
     Edit Style: Edit
     Edit limit: 0
 Column: class_preference_3
```

DataWindow: d_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:30:24

Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 30
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: class_preference_4
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 40
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: chair
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 90
Initial Value: None
Edit Style: Edit
Edit limit: 0

DataWindow: d_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:30:24

Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 120
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: tenured
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 130
Initial Value: None
Edit Style: Edit
Edit limit: 0

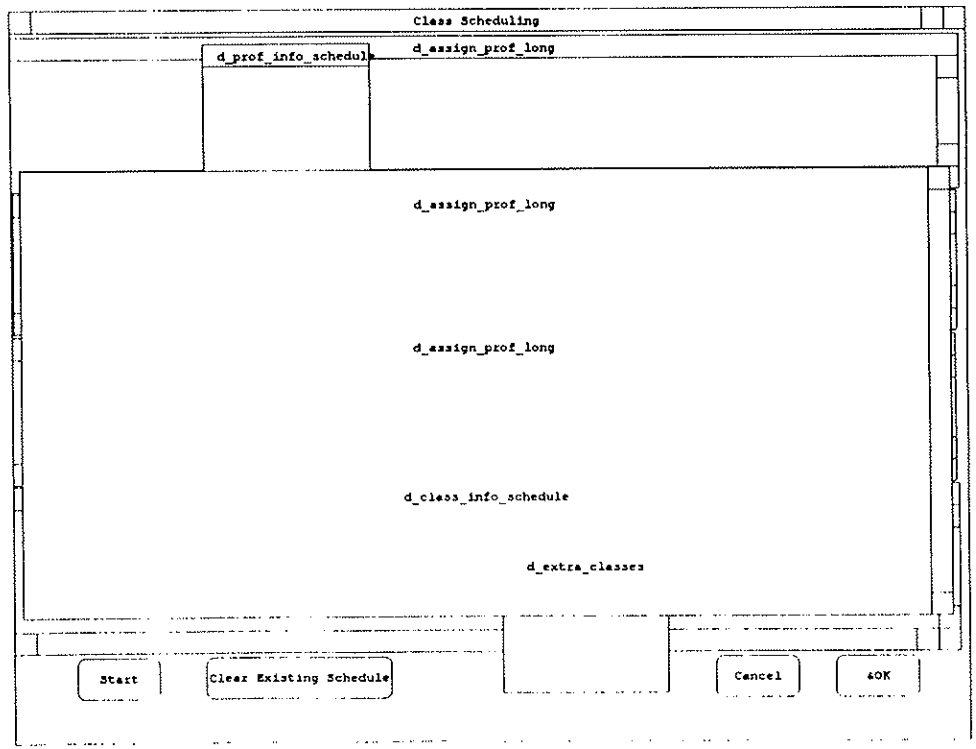
Column: degree_earned
Format: "[general]"
Border style: Shadow Box
Validation: None
Validation Message: None
Tab Sequence: 110
Initial Value: None
Edit Style: Edit

DataWindow: d_more_prof_info
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:30:24

Column: priority
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 100
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: previous_class_4
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 80
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: previous_class_3
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 70
    Initial Value: None

```
    Edit limit: 0
Column: previous_class_2
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 60
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: previous_class_1
    Format: "[general]"
    Border style: Shadow Box
    Validation: None
    Validation Message: None
    Tab Sequence: 50
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42



```
Window: w_scheduling
X = 910             Y = 577             Width = 2844        Height = 1905
Visible = true      Enabled = true      TitleBar = true     Title = "Class Scheduling"
ControlMenu = true  MinBox = true       MaxBox = true       Resizable = true
WindowType = main!  WindowState = normal!                   BackColor = 12632256

Instance Variables
Integer        iv_ia_ProfClass[20, 6]
Integer        iv_day1 = 1
Integer        iv_day2 = 2
Integer        iv_day3 = 4
Integer        iv_day4 = 8
Integer        iv_day5 = 16
Integer        iv_day6 = 32
Integer        iv_NumProfs

s_main_win_parms     s_parms

End of Instance Variables


Script for: open  event
//Retrieves data from the database regarding class information, faculty member information,
//and class schedule information.

//Local Variables
Integer     lv_i_Loop
Integer     lv_i_RowCounts
String      lv_s_Term
String      lv_s_Department
String      lv_s_FilterString
//End Local Variables

s_parms = Message.PowerObjectParm
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
lv_s_Term          =  s_parms.term
lv_s_Department    =  s_parms.department

This.Title = "Class Scheduling - " + lv_s_Term + " " + lv_s_Department

SetTransObject(dw_class_info, SQLCA)
SetTransObject(dw_prof_info, SQLCA)
SetTransObject(dw_final_classes, SQLCA)

Retrieve(dw_class_info, lv_s_Term, lv_s_Department)
Retrieve(dw_prof_info, lv_s_Department)
Retrieve(dw_final_classes, lv_s_Term, lv_s_Department)

SetSort(dw_class_info, "course_num A, section_num A")
Sort(dw_class_info)

lv_s_FilterString =  "active = 'y'"
SetFilter(dw_prof_info, lv_s_FilterString)
Filter(dw_prof_info)

SetSort(dw_prof_info, "calculated_priority")
Sort(dw_prof_info)

iv_NumProfs = RowCount(dw_prof_info)

lv_i_RowCounts =  RowCount(dw_prof_extra)
IF (lv_i_RowCounts <> 0) THEN
   FOR lv_i_Loop = 1 to lv_i_RowCounts
      DeleteRow(dw_prof_extra, 1)
   NEXT
END IF

lv_i_RowCounts =  RowCount(dw_prof_okay)
IF (lv_i_RowCounts <> 0) THEN
   FOR lv_i_Loop = 1 to lv_i_RowCounts
```

```
      DeleteRow(dw_prof_okay, 1)
   NEXT
END IF

lv_i_RowCounts =  RowCount(dw_prof_few)
IF (lv_i_RowCounts <> 0) THEN
   FOR lv_i_Loop = 1 to lv_i_RowCounts
      DeleteRow(dw_prof_few, 1)
   NEXT
END IF

PostEvent(w_scheduling, "afteropen")


End of Script



Script for: afteropen  event
//If any data is in the class schedule datawindow the user is notified of what to do if they desire a new
schedule.

//Local Variables
Integer     lv_i_FinalCount
//End Variables

lv_i_FinalCount   =  RowCount(dw_final_classes)

IF (lv_i_FinalCount <> 0) THEN
   cb_clear.enabled  =  TRUE
   cb_start.enabled  =  FALSE
   MessageBox("Information", "A final schedule already exists for this term and department. " &
+ "If you want to make a new schedule, use the Clear Existing Schedule button.", Informa
tion!, OK!)
END IF
```

End of Script

```
DataWindow: dw_class_info
X = 0              Y = 1181           Width = 2817        Height = 433
TabOrder = 10      DataObject = "d_class_info_schedule"   TitleBar = true
Title = "Class Information"           HScrollBar = true   VScrollBar = true
Border = true      LiveScroll = true  BorderStyle = stylebox!

DataWindow: dw_extra_class
X = 1454           Y = 1361           Width = 494         Height = 361
TabOrder = 20      DataObject = "d_extra_classes"         TitleBar = true
Title = "Extra Classes"               Border = true       LiveScroll = true
BorderStyle = stylebox!

DataWindow: dw_prof_few
X = 5              Y = 421            Width = 2807        Height = 365
TabOrder = 60      DataObject = "d_assign_prof_long"      TitleBar = true
Title = "Prof Short"                  HScrollBar = true   VScrollBar = true
Border = true      LiveScroll = true  BorderStyle = stylebox!

DataWindow: dw_prof_okay
X = 0              Y = 793            Width = 2807        Height = 385
TabOrder = 50      DataObject = "d_assign_prof_long"      TitleBar = true
Title = "Prof done" HScrollBar = true  VScrollBar = true  Border = true
LiveScroll = true  BorderStyle = stylebox!

CommandButton: cb_start
X = 188            Y = 1625           Width = 247         Height = 109
```

Script for: clicked event

```
//Initilizes the faculty member array, gets ready for producing a class schedule,
//and controls the scheduling algorithm.

//Local Varibles
Character   lv_ca_EmpType[11]
Integer     lv_i_Answer
Integer     lv_i_TotalNumProf
Integer     lv_i_TotalNumClass
Integer     lv_i_CurrentProf
Integer     lv_i_AddedProf
Integer     lv_i_Priority
Integer     lv_i_Loop1
Integer     lv_i_Loop2
String      lv_s_Name
String      lv_s_Chair
//End Local Variables

SetPointer(Hourglass!)

SetRedraw(dw_final_classes, FALSE)

//Initialize the array for storing the class periods a professor has assigned
FOR lv_i_Loop1 = 1 TO 20
   FOR lv_i_Loop2 = 1 TO 6
      iv_ia_ProfClass[lv_i_Loop1, lv_i_Loop2] = 0
   NEXT
NEXT

//Sort the professors by priority
SetSort(dw_prof_info, "calculated_priority A")
Sort(dw_prof_info)

//Establish the number of classes and professors
```

```
lv_i_TotalNumProf    =  RowCount(dw_prof_info)
lv_i_TotalNumClass   =  RowCount(dw_class_info)

//Set-up the main prof class datawindow (dw_prof_extra)
FOR lv_i_CurrentProf = 1 TO lv_i_TotalNumProf
   lv_s_Name    =  Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "name"))
   lv_i_Priority  =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "calculated_priority")
   lv_s_Chair   =  Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "chair"))
   lv_ca_EmpType  =  Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "emp_type"))

   lv_i_AddedProf =  InsertRow(dw_prof_extra, 0)

   SetItem(dw_prof_extra, lv_i_AddedProf, "name", lv_s_Name)
   SetItem(dw_prof_extra, lv_i_AddedProf, "priority", lv_i_Priority)
   SetItem(dw_prof_extra, lv_i_AddedProf, "current_preference", 0)
   SetItem(dw_prof_extra, lv_i_AddedProf, "current_previous", 0)

   IF (lv_s_Chair = "y") THEN
      SetItem(dw_prof_extra, lv_i_AddedProf, "credits", 0.5)
   ELSE
      SetItem(dw_prof_extra, lv_i_AddedProf, "credits", 0)
   END IF

   IF (lv_ca_EmpType[1] = "p") THEN
      SetItem(dw_prof_extra, lv_i_AddedProf, "needed_credits", 2)
   ELSE
      SetItem(dw_prof_extra, lv_i_AddedProf, "needed_credits", 3.5)
   END IF
NEXT

//Phase 1 -- Assign as many of the classes by preference
TriggerEvent(cb_start, "phase1")

//Phase 2 -- Sort the entries into to many classes, to few classes, okay number of classes
TriggerEvent(cb_start, "phase2")
```

```
//Phase 3 -- finish assigning any remaining classes (if any) according to previous experience
TriggerEvent(cb_start, "phase3")

//Phase 4 -- Assign any remaining classes (if any) to any professor that has that slot open
lv_i_Answer=MessageBox("Seeking Information", "At this time, would you like to have any remaining cl
asses " + &
"assigned to a faculty member available during this classes time?  The other option is to wait until th
e end " + &
   "to assign the remaining classes.", Question!, YesNo!)
IF (lv_i_Answer = 1) THEN
   TriggerEvent(cb_start, "phase4")
END IF

//Phase 5 -- Move all unassigned classes (if any) to a seperate datawindow
TriggerEvent(cb_start, "phase5")

//Phase 6 -- Let professors with the least amount of credits chose from the last acquired courses
//             of the professors with extra credits (based on preference)
TriggerEvent(cb_start, "phase6")

//Phase 7 -- Let professors with the least amount of credits chose from the last acquired courses
//             of the professors with extra credits (based on previously taught)
TriggerEvent(cb_start, "phase7")

//Phase 8 -- Assign any remaining classes to any professor that has that time slot open
TriggerEvent(cb_start, "phase8")

//Phase 9 -- Move all assigned classes to the done datawindow ... notify if there are any leftover classe

TriggerEvent(cb_start, "phase9")

SetRedraw(dw_final_classes, TRUE)

cb_start.enabled  =  FALSE
cb_clear.enabled  =  TRUE
cb_cancel.enabled =  TRUE
```

End of Script

Script for: phase1 event
//Assign as many of the classes to the faculty members by preference

```
//Local Varibles
Boolean     lv_b_Done
Boolean     lv_b_FoundClass
Boolean     lv_b_Continue  =  TRUE
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_NotEmpty = TRUE
Decimal     lv_d_TotalCredits
Decimal     lv_d_NeedCredits
Integer     lv_i_TotalNumProf
Integer     lv_i_TotalNumClass
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CurrentPreference
Integer     lv_i_PrefLoop
Integer     lv_i_OtherSection
Integer     lv_i_Priority
Integer     lv_i_Loop1
Integer     lv_i_CourseNum2
Integer     lv_i_PrefCourseNum
String      lv_s_TempSection
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_Lab
String      lv_s_LabDays1
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
String      lv_s_LabDays2
String      lv_s_TimePref
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

lv_i_TotalNumProf =  RowCount(dw_prof_info)
lv_i_TotalNumClass   =  RowCount(dw_class_info)

FOR lv_i_PrefLoop = 1 TO 4
 FOR lv_i_CurrentProf = 1 to lv_i_TotalNumProf
   lv_b_FoundClass   =  FALSE
   DO WHILE (NOT lv_b_FoundClass)
      lv_i_CurrentPreference  =  GetItemNumber(dw_prof_extra, lv_i_CurrentProf, "current_preference")
      lv_i_CurrentPreference  =  lv_i_CurrentPreference + 1
      SetItem(dw_prof_extra, lv_i_CurrentProf, "current_preference", lv_i_CurrentPreference)

      IF (lv_i_CurrentPreference > 4) THEN
         //No more preferences -- assign no more classes until phase 3
         //Should exit just past the first DO WHILE loop
         EXIT
      ELSEIF (lv_i_CurrentPreference = 1) THEN
         lv_i_PrefCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "class_preference_1")
      ELSEIF (lv_i_CurrentPreference = 2) THEN
         lv_i_PrefCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "class_preference_2")
      ELSEIF (lv_i_CurrentPreference = 3) THEN
         lv_i_PrefCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "class_preference_3")
      ELSEIF (lv_i_CurrentPreference = 4) THEN
         lv_i_PrefCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "class_preference_4")
      END IF
```

```
      lv_i_CurrentClass = 1
      lv_b_Done    =  FALSE
      DO WHILE (NOT lv_b_Done)
         lv_b_Continue  =  TRUE
         lv_b_Next      =  FALSE
         lv_b_Above     =  FALSE
         lv_i_CurrentCourseNum   =  GetItemNumber(dw_class_info, lv_i_CurrentClass, "course_num")
         IF (lv_i_CurrentCourseNum = lv_i_PrefCourseNum) THEN
            lv_s_TimePref  =  Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "time_preference"))
            lv_t_StartTime1   =  GetItemTime(dw_class_info, lv_i_CurrentClass, "start_time")

            IF (lv_s_TimePref = "am") THEN
               IF (NOT (lv_t_StartTime1 <= Time(11,20,0))) THEN
                  lv_b_Continue  =  FALSE
               END IF
            ELSEIF (lv_s_TimePref = "pm") THEN
               IF (NOT (lv_t_StartTime1 >= Time(11,20,0))) THEN
                  lv_b_Continue  =  FALSE
               END IF
            END IF

            IF (lv_b_Continue) THEN
               lv_s_Lab =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab"))

               IF (lv_s_Lab = "y") THEN
lv_s_SectionNum=Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "section_num"
))
                  lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
                  lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")

                  IF (lv_i_CurrentClass + 1 <= lv_i_TotalNumClass) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_CurrentClass + 1, "course_num
")
                     lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass + 1, "days"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_CurrentClass + 1, "start_time")
```

```
                    lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_CurrentClass + 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t
_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                        lv_b_Next    =  TRUE
                        lv_b_Above   =  FALSE
                        lv_i_OtherSection = lv_i_CurrentClass + 1
                    END IF
                ELSEIF (lv_i_CurrentClass - 1 >= 1) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_CurrentClass - 1, "course_num
")
                    lv_s_Days2   =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass - 1, "days"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "start_time")

                    lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t
_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                        lv_b_Next    =  FALSE
                        lv_b_Above   =  TRUE
                        lv_i_OtherSection = lv_i_CurrentClass - 1
                    END IF
                END IF

                lv_s_LabDays1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab_days"))
lv_t_LabStartTime1=GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_start_time")

                lv_t_LabEndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_end_time")

                IF (lv_b_Next OR lv_b_Above) THEN
lv_s_LabDays2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_days"))

lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_start_tim
e")
                    lv_t_LabEndTime2  =  GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_time")
                END IF
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
                ELSE
lv_s_SectionNum=Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "section_num"
))
                   lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
                   lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")
                   lv_s_LabDays1  =  ""
                   lv_t_LabStartTime1   =  Time(0,0,0)
                   lv_t_LabEndTime1  =  Time(0,0,0)
                   lv_s_LabDays2  =  ""
                   lv_t_LabStartTime2   =  Time(0,0,0)
                   lv_t_LabEndTime2  =  Time(0,0,0)
                END IF

                lv_i_Priority  =  GetItemNumber(dw_prof_extra, lv_i_CurrentProf, "priority")

lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_StartTime1
, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartTime2,
&
                   lv_t_LabEndTime2)

                IF (lv_b_FoundClass) THEN
                   lv_i_Loop1 = 0
                   lv_b_NotEmpty  =  TRUE
                   DO WHILE (lv_b_NotEmpty)
                      lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentProf, "section_"
 + String(lv_i_Loop1)))
                      IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                         lv_b_NotEmpty  =  FALSE
                      END IF
                   LOOP

SetItem(dw_prof_extra, lv_i_CurrentProf, "course_" + String(lv_i_Loop1), lv_i_CurrentCou
rseNum)
SetItem(dw_prof_extra, lv_i_CurrentProf, "section_" + String(lv_i_Loop1), lv_s_SectionNu
```

```
                IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "section_
num"))
SetItem(dw_prof_extra, lv_i_CurrentProf, "course_" + String(lv_i_Loop1 + 1), lv_i_Cou
rseNum2)
SetItem(dw_prof_extra, lv_i_CurrentProf, "section_" + String(lv_i_Loop1 + 1), lv_s_Se
ctionNum2)
                END IF
                lv_d_TotalCredits = GetItemDecimal(dw_prof_extra, lv_i_CurrentProf, "credits")
                IF (lv_s_Lab = "y") THEN
                   IF (lv_b_Next OR lv_b_Above) THEN
                      lv_d_TotalCredits = lv_d_TotalCredits + 2
                      DeleteRow(dw_class_info, lv_i_OtherSection)
                   ELSE
                      lv_d_TotalCredits = lv_d_TotalCredits + 1.5
                   END IF
                ELSE
                   lv_d_TotalCredits = lv_d_TotalCredits + 1
                END IF
                SetItem(dw_prof_extra, lv_i_CurrentProf, "credits", lv_d_TotalCredits)

                DeleteRow(dw_class_info, lv_i_CurrentClass)
                lv_b_Done    =  TRUE
                lv_i_TotalNumClass    =  RowCount(dw_class_info)
             END IF
          ELSE
             lv_b_Continue  =  TRUE
          END IF
       END IF
       lv_i_CurrentClass =  lv_i_CurrentClass + 1
       IF (lv_i_CurrentClass > lv_i_TotalNumClass) THEN
          lv_b_Done    =  TRUE
       END IF
    LOOP
 LOOP
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
   IF (lv_i_TotalNumClass = 0) THEN
      EXIT
   END IF
 NEXT
 IF (lv_i_TotalNumClass = 0) THEN
   EXIT
 END IF
NEXT
```

End of Script

Script for: phase2 event

```
//Sort the faculty members with to many classes, faculty members with to few classes,
//and faculty members with an okay number of classes into the appropriate datawindows.

//Local Variables
Decimal     lv_d_TotalCredits
Decimal     lv_d_NeedCredits
Integer     lv_i_TotalNumProf
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentRow
Integer     lv_i_CurrentPrevious
Integer     lv_i_AddedRow
Integer     lv_i_OtherSection
Integer     lv_i_Loop1
Integer     lv_i_Priority
Integer     lv_i_TempCourse
Integer     lv_i_CourseNum
Integer     lv_i_CourseNum2
Integer     lv_i_PrefCourseNum
Integer     lv_i_PastCourseNum
String      lv_s_TempSection
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
String      lv_s_Name
//End Local Variables

lv_i_TotalNumProf =  RowCount(dw_prof_extra)
lv_i_CurrentRow = 1
FOR lv_i_CurrentProf = 1 TO lv_i_TotalNumProf
   lv_d_TotalCredits =  GetItemDecimal(dw_prof_extra, lv_i_CurrentRow, "credits")
   lv_d_NeedCredits  =  GetItemDecimal(dw_prof_extra, lv_i_CurrentRow, "needed_credits")

   IF (lv_d_TotalCredits < lv_d_NeedCredits - 0.5) THEN
      lv_s_Name   =  Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "name"))
      lv_i_Priority  =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "priority")
      lv_i_CurrentPreference  =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "current_preference")
      lv_i_CurrentPrevious    =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "current_previous")

      lv_i_AddedRow  =  InsertRow(dw_prof_few, 0)

      SetItem(dw_prof_few, lv_i_AddedRow, "name", lv_s_Name)
      SetItem(dw_prof_few, lv_i_AddedRow, "priority", lv_i_Priority)
      SetItem(dw_prof_few, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
      SetItem(dw_prof_few, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
      SetItem(dw_prof_few, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
      SetItem(dw_prof_few, lv_i_AddedRow, "credits", lv_d_TotalCredits)

      FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "course_" + String(lv_i_Loop1
))
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "section_" + String(lv_
i_Loop1)))
         SetItem(dw_prof_few, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
         SetItem(dw_prof_few, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
      NEXT

      DeleteRow(dw_prof_extra, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredits)) THEN
```

```
Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:37:42

      lv_s_Name    =  Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "name"))

      lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

      SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
      SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

      FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "course_" + String(lv_i_Loop1
))
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "section_" + String(lv_
i_Loop1)))
         SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
         SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
      NEXT

      DeleteRow(dw_prof_extra, lv_i_CurrentRow)
   ELSE
      lv_i_CurrentRow    =  lv_i_CurrentRow + 1
   END IF
NEXT

End of Script



Script for: phase3  event
//Assign any remaining classes (if any) to faculty members needing classes according to their previous ex
erience.
//Sort these entires into the faculty members with to many classes, faculty members with to few classes,
//and faculty members with an okay number of classes into the appropriate datawindows.

//Local Varibles
Boolean     lv_b_DoneClass
Boolean     lv_b_Done
Boolean     lv_b_FoundClass
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
Boolean     lv_b_Continue  =  TRUE
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_NotEmpty = TRUE
Decimal     lv_d_TotalCredits
Decimal     lv_d_NeedCredits
Integer     lv_i_TotalFewProf
Integer     lv_i_TotalNumClass
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentRow
Integer     lv_i_CurrentPrevious
Integer     lv_i_AddedRow
Integer     lv_i_PastLoop
Integer     lv_i_OtherSection
Integer     lv_i_Loop1
Integer     lv_i_Priority
Integer     lv_i_TempCourse
Integer     lv_i_CourseNum
Integer     lv_i_CourseNum2
Integer     lv_i_PrefCourseNum
Integer     lv_i_PastCourseNum
String      lv_s_TempSection
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_Lab
String      lv_s_LabDays1
String      lv_s_LabDays2
String      lv_s_Name
String      lv_s_TimePref
Time        lv_t_StartTime1
Time        lv_t_StartTime2
```

```
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

lv_i_TotalNumClass   =  RowCount(dw_class_info)
IF (lv_i_TotalNumClass > 0) THEN
   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)

   lv_b_DoneClass =  FALSE
   lv_i_TotalFewProf =  RowCount(dw_prof_few)

   FOR lv_i_PastLoop = 1 TO 4
      FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
         lv_b_FoundClass   =  FALSE
         DO WHILE (NOT lv_b_FoundClass)
            lv_i_CurrentPrevious =  GetItemNumber(dw_prof_few, lv_i_CurrentProf, "current_previous")
            lv_i_CurrentPrevious =  lv_i_CurrentPrevious + 1
            SetItem(dw_prof_few, lv_i_CurrentProf, "current_previous", lv_i_CurrentPrevious)

            IF (lv_i_CurrentPrevious > 4) THEN
               //No more preferences -- assign no more classes until phase 3
               EXIT
            ELSEIF (lv_i_CurrentPrevious = 1) THEN
               lv_i_PastCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "previous_class_1")
            ELSEIF (lv_i_CurrentPrevious = 2) THEN
               lv_i_PastCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "previous_class_2")
            ELSEIF (lv_i_CurrentPrevious = 3) THEN
               lv_i_PastCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "previous_class_3")
            ELSEIF (lv_i_CurrentPrevious = 4) THEN
               lv_i_PastCourseNum   =  GetItemNumber(dw_prof_info, lv_i_CurrentProf, "previous_class_4")
            END IF
```

```
            lv_i_CurrentClass = 1
            lv_b_Done    =  FALSE
            DO WHILE (NOT lv_b_Done)
               lv_b_Continue  =  TRUE
               lv_b_Next      =  FALSE
               lv_b_Above     =  FALSE

               IF (lv_i_CurrentClass > lv_i_TotalNumClass) THEN
                  EXIT
               END IF

               lv_i_CurrentCourseNum   =  GetItemNumber(dw_class_info, lv_i_CurrentClass, "course_num")
               IF (lv_i_CurrentCourseNum = lv_i_PastCourseNum) THEN
lv_s_TimePref=Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "time_preference"
))
                  lv_t_StartTime1   =  GetItemTime(dw_class_info, lv_i_CurrentClass, "start_time")

                  IF (lv_s_TimePref = "am") THEN
                     IF (NOT (lv_t_StartTime1 <= Time(11,20,0))) THEN
                        lv_b_Continue  =  FALSE
                     END IF
                  ELSEIF (lv_s_TimePref = "pm") THEN
                     IF (NOT (lv_t_StartTime1 >= Time(11,20,0))) THEN
                        lv_b_Continue  =  FALSE
                     END IF
                  END IF

                  IF (lv_b_Continue) THEN
                     lv_s_Lab =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab"))

                     IF (lv_s_Lab = "y") THEN
lv_s_SectionNum=Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "sectio
n_num"))

                        lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
```

```
                        lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")

                        IF (lv_i_CurrentClass + 1 <= lv_i_TotalNumClass) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_CurrentClass + 1, "cour
se_num")
lv_s_Days2=Trim(GetItemString(dw_class_info, lv_i_CurrentClass + 1, "days
"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_CurrentClass + 1, "start_
time")
lv_t_EndTime2=GetItemTime(dw_class_info, lv_i_CurrentClass + 1, "end_t
ime")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND
 (lv_t_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                              lv_b_Next   =  TRUE
                              lv_b_Above  =  FALSE
                              lv_i_OtherSection = lv_i_CurrentClass + 1
                           END IF
                        ELSEIF (lv_i_CurrentClass - 1 >= 1) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_CurrentClass - 1, "cour
se_num")
lv_s_Days2=Trim(GetItemString(dw_class_info, lv_i_CurrentClass - 1, "days
"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "start_
time")
lv_t_EndTime2=GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "end_t
ime")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND
 (lv_t_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                              lv_b_Next   =  FALSE
                              lv_b_Above  =  TRUE
                              lv_i_OtherSection = lv_i_CurrentClass - 1
                           END IF
                        END IF
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
lv_s_LabDays1=Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab_days
"))
lv_t_LabStartTime1=GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_start_
time")
lv_t_LabEndTime1=GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_end_time
")

                        IF (lv_b_Next OR lv_b_Above) THEN
lv_s_LabDays2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_d
ays"))
lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_sta
rt_time")
lv_t_LabEndTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_t
ime")
                        END IF
                      ELSE
lv_s_SectionNum=Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "sectio
n_num"))
                        lv_s_Days1   =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
                        lv_t_EndTime1   =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")
                        lv_s_LabDays1   =  ""
                        lv_t_LabStartTime1    =  Time(0,0,0)
                        lv_t_LabEndTime1   =  Time(0,0,0)
                        lv_s_LabDays2   =  ""
                        lv_t_LabStartTime2    =  Time(0,0,0)
                        lv_t_LabEndTime2   =  Time(0,0,0)
                      END IF

                      lv_i_Priority   =  GetItemNumber(dw_prof_few, lv_i_CurrentProf, "priority")

lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_Star
tTime1, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartT
ime2, &
                        lv_t_LabEndTime2)
```

```
                    IF (lv_b_FoundClass) THEN
                       lv_i_Loop1 = 0
                       lv_b_NotEmpty  =  TRUE
                       DO WHILE (lv_b_NotEmpty)
                          lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentProf, "secti
on_" + String(lv_i_Loop1)))
                          IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                             lv_b_NotEmpty  =  FALSE
                          END IF
                       LOOP

SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1), lv_i_Curren
tCourseNum)
SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1), lv_s_Secti
onNum)

                       IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "se
ction_num"))
SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1 + 1), lv_i
_CourseNum2)
SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1 + 1), lv_
s_SectionNum2)
                       END IF
                       lv_d_TotalCredits = GetItemDecimal(dw_prof_few, lv_i_CurrentProf, "credits")
                       IF (lv_s_Lab = "y") THEN
                          IF (lv_b_Next OR lv_b_Above) THEN
                          lv_d_TotalCredits = lv_d_TotalCredits + 2
                             DeleteRow(dw_class_info, lv_i_OtherSection)
                          ELSE
                             lv_d_TotalCredits = lv_d_TotalCredits + 1.5
                          END IF
                       ELSE
                          lv_d_TotalCredits = lv_d_TotalCredits + 1
                       END IF
```

```
                        SetItem(dw_prof_few, lv_i_CurrentProf, "credits", lv_d_TotalCredits)

                        DeleteRow(dw_class_info, lv_i_CurrentClass)
                        lv_b_Done   =  TRUE
                        lv_i_TotalNumClass   =  RowCount(dw_class_info)
                     END IF
                  ELSE
                     lv_b_Continue  =  TRUE
                  END IF
                  IF (lv_i_TotalNumClass = 0) THEN
                     lv_b_DoneClass =  TRUE
                     EXIT
                  END IF
               END IF
               lv_i_CurrentClass =  lv_i_CurrentClass + 1
               IF (lv_i_CurrentClass > lv_i_TotalNumClass) THEN
                  lv_b_Done   =  TRUE
               END IF
            LOOP
         LOOP
      NEXT
   NEXT

   //Move the professors to the appropriate datawindow (done, extra, or stay at few)
   lv_i_CurrentRow = 1
   FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
      lv_d_TotalCredits =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "credits")
      lv_d_NeedCredits  =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "needed_credits")

      IF (lv_d_TotalCredits > lv_d_NeedCredits) THEN
         lv_s_Name   =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
         lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "priority")
         lv_i_CurrentPreference  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_preference")
         lv_i_CurrentPrevious    =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_previous")

         lv_i_AddedRow  =  InsertRow(dw_prof_extra, 0)
```

```
        SetItem(dw_prof_extra, lv_i_AddedRow, "name", lv_s_Name)
        SetItem(dw_prof_extra, lv_i_AddedRow, "priority", lv_i_Priority)
        SetItem(dw_prof_extra, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
        SetItem(dw_prof_extra, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
        SetItem(dw_prof_extra, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
        SetItem(dw_prof_extra, lv_i_AddedRow, "credits", lv_d_TotalCredits)

        FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_i_Loop
1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + String(lv
_i_Loop1)))
           SetItem(dw_prof_extra, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
           SetItem(dw_prof_extra, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
        NEXT

        DeleteRow(dw_prof_few, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredits)) T
HEN
        lv_s_Name   =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))

        lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

        SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
        SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

        FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_i_Loop
1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + String(lv
_i_Loop1)))
           SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
           SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
        NEXT
```

```
         DeleteRow(dw_prof_few, lv_i_CurrentRow)
      ELSE
         lv_i_CurrentRow   =  lv_i_CurrentRow + 1
      END IF
   NEXT
END IF


End of Script


Script for: phase4  event
//Assign any remaining classes (if any) to any faculty member that has the time slot open and needs a cla
s.
//After each class is assigned, those faculty members are sorted into the faculty members with to many cl
sses,
//faculty members with to few classes, and faculty members with an okay number of classes
//into the appropriate datawindows.

//Local Varibles
Boolean     lv_b_Continue  =  TRUE
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_FoundClass
Boolean     lv_b_NotEmpty = TRUE
Decimal     lv_d_TotalCredits
Decimal     lv_d_NeedCredits
Integer     lv_i_Loop1
Integer     lv_i_TotalFewProf
Integer     lv_i_TotalNumClass
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentProf2
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentPrevious
```

```
Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:37:42

Integer     lv_i_CurrentCourseNum
Integer     lv_i_CurrentRow
Integer     lv_i_AddedRow
Integer     lv_i_OtherSection
Integer     lv_i_Priority
Integer     lv_i_TempCourse
Integer     lv_i_CourseNum2
String      lv_s_TempSection
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_Lab
String      lv_s_LabDays1
String      lv_s_LabDays2
String      lv_s_Name
String      lv_s_TimePref
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

lv_i_TotalNumClass   =  RowCount(dw_class_info)
IF (lv_i_TotalNumClass > 0) THEN
   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)

   lv_i_TotalFewProf =  RowCount(dw_prof_few)

   FOR lv_i_CurrentClass = 1 TO lv_i_TotalNumClass
      FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
```

```
                  lv_i_OtherSection = lv_i_CurrentClass + 1
               END IF
            ELSEIF (lv_i_CurrentClass - 1 >= 1) THEN
               lv_i_CourseNum2   =  GetItemNumber(dw_class_info, lv_i_CurrentClass - 1, "course_num")
               lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass - 1, "days"))
               lv_t_StartTime2   =  GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "start_time")
               lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t_St
artTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                  lv_b_Next   =  FALSE
                  lv_b_Above  =  TRUE
                  lv_i_OtherSection = lv_i_CurrentClass - 1
               END IF
            END IF

            lv_s_LabDays1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab_days"))
            lv_t_LabStartTime1   =  GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_start_time")
            lv_t_LabEndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_end_time")

            IF (lv_b_Next OR lv_b_Above) THEN
               lv_s_LabDays2  =  Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_days"))
lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_start_time")

               lv_t_LabEndTime2  =  GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_time")
            END IF
         ELSE
            lv_s_SectionNum   =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "section_num"))
            lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
            lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")
            lv_s_LabDays1  =  ""
            lv_t_LabStartTime1   =  Time(0,0,0)
            lv_t_LabEndTime1  =  Time(0,0,0)
            lv_s_LabDays2  =  ""
            lv_t_LabStartTime2   =  Time(0,0,0)
            lv_t_LabEndTime2  =  Time(0,0,0)
```

```
            END IF

            lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentProf, "priority")

lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_StartTime1, l
v_t_EndTime1, &
               lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartTime2, &
               lv_t_LabEndTime2)

            IF (lv_b_FoundClass) THEN
               lv_i_Loop1 = 0
               lv_b_NotEmpty  =  TRUE
               DO WHILE (lv_b_NotEmpty)
                  lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentProf, "section_" + St
ring(lv_i_Loop1)))
                  IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                     lv_b_NotEmpty  =  FALSE
                  END IF
               LOOP

SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1), lv_i_CurrentCourseNu
m)
               SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1), lv_s_SectionNum)

               IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "section_num
"))
SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1 + 1), lv_i_CourseNu
m2)
SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1 + 1), lv_s_Section
Num2)
               END IF
               lv_d_TotalCredits = GetItemDecimal(dw_prof_few, lv_i_CurrentProf, "credits")
               IF (lv_s_Lab = "y") THEN
                  IF (lv_b_Next OR lv_b_Above) THEN
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
                  lv_d_TotalCredits = lv_d_TotalCredits + 2
                  DeleteRow(dw_class_info, lv_i_OtherSection)
               ELSE
                  lv_d_TotalCredits = lv_d_TotalCredits + 1.5
               END IF
            ELSE
               lv_d_TotalCredits = lv_d_TotalCredits + 1
            END IF
            SetItem(dw_prof_few, lv_i_CurrentProf, "credits", lv_d_TotalCredits)

            DeleteRow(dw_class_info, lv_i_CurrentClass)
            lv_i_TotalNumClass   =  RowCount(dw_class_info)
         END IF
      ELSE
         lv_b_Continue  =  TRUE
      END IF

      //Move the professors to the appropriate datawindow (done, extra, or stay at few)
      lv_i_CurrentRow = 1
      FOR lv_i_CurrentProf2 = 1 TO lv_i_TotalFewProf
         lv_d_TotalCredits =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "credits")
         lv_d_NeedCredits  =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "needed_credits")

         IF (lv_d_TotalCredits > lv_d_NeedCredits) THEN
            lv_s_Name   =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
            lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "priority")
lv_i_CurrentPreference=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_preferenc
e")
lv_i_CurrentPrevious=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_previous
")

            lv_i_AddedRow  =  InsertRow(dw_prof_extra, 0)

            SetItem(dw_prof_extra, lv_i_AddedRow, "name", lv_s_Name)
            SetItem(dw_prof_extra, lv_i_AddedRow, "priority", lv_i_Priority)
            SetItem(dw_prof_extra, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
```

```
                SetItem(dw_prof_extra, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
                SetItem(dw_prof_extra, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
                SetItem(dw_prof_extra, lv_i_AddedRow, "credits", lv_d_TotalCredits)

                FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_
i_Loop1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + Str
ing(lv_i_Loop1)))
                    SetItem(dw_prof_extra, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
SetItem(dw_prof_extra, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)

                NEXT

                DeleteRow(dw_prof_few, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredi
ts)) THEN
                lv_s_Name    =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))

                lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

                SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
                SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

                FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_
i_Loop1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + Str
ing(lv_i_Loop1)))
                    SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
                    SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
                NEXT

                DeleteRow(dw_prof_few, lv_i_CurrentRow)
             ELSE
                lv_i_CurrentRow    =  lv_i_CurrentRow + 1
```

```
            END IF
         NEXT
         lv_i_TotalFewProf =  RowCount(dw_prof_few)
         IF ((DeletedCount(dw_class_info) > 0) AND (lv_i_CurrentClass > lv_i_TotalNumClass)) THEN
            EXIT
         END IF
      NEXT
   NEXT
END IF


End of Script



Script for: phase5  event
//Moves all unassigned classes (if any) to a separate datawindow

//Local Variables
Integer     lv_i_TotalNumClass
Integer     lv_i_Loop
Integer     lv_i_CourseNum
String      lv_s_SectionNum
//End Local Variables

lv_i_TotalNumClass = RowCount(dw_class_info)

IF (lv_i_TotalNumClass > 0) THEN
   FOR lv_i_Loop = 1 TO lv_i_TotalNumClass
      lv_i_CourseNum =  GetItemNumber(dw_class_info, lv_i_Loop, "course_num")
      lv_s_SectionNum   =  Trim(GetItemString(dw_class_info, lv_i_Loop, "section_num"))

      InsertRow(dw_extra_class, 0)
      SetItem(dw_extra_class, lv_i_Loop, "course_num", lv_i_CourseNum)
      SetItem(dw_extra_class, lv_i_Loop, "section_num", lv_s_SectionNum)
   NEXT
```

```
END IF

End of Script


Script for: phase6  event
//Let faculty members with the least amount of credits choose from the last acquired courses
//of the professors with extra credits (based on preference).  After each transfer is made, those
//faculty members are sorted into the faculty members with to many classes, faculty members with
//to few classes, and faculty members with an okay number of classes into the appropriate datawindows.

//Local Variables
Boolean     lv_b_DeleteClass
Boolean     lv_b_Done
Boolean     lv_b_Continue
Boolean     lv_b_Found
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_Exit
Boolean     lv_b_FoundClass
Boolean     lv_b_NotEmpty
Decimal     lv_d_NeedCredits
Decimal     lv_d_TotalCredits
Decimal     lv_d_ExtraTotalCredits
Integer     lv_i_TotalNumClass
Integer     lv_i_TotalFewProf
Integer     lv_i_TotalExtraProf
Integer     lv_i_AddedRow
Integer     lv_i_ClassRow
Integer     lv_i_CurrentRow
Integer     lv_i_CurrentFewProf
Integer     lv_i_CurrentExtraProf
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentPrevious
```

```
Integer     lv_i_Class
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CourseNum2
Integer     lv_i_TempCourse
Integer     lv_i_PrefCourseNum
Integer     lv_i_OtherSection
Integer     lv_i_Priority
Integer     lv_i_MaxClass = 0
Integer     lv_i_Loop
Integer     lv_i_Loop1
Integer     lv_i_Loop2
Integer     lv_i_Loop3
String      lv_s_Name
String      lv_s_TimePref
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_TempSection
String      lv_s_Lab
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_LabDays1
String      lv_s_LabDays2
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

Retrieve(dw_class_info, s_parms.term, s_parms.department)

SetSort(dw_class_info, "course_num A, section_num A")
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
Sort(dw_class_info)

lv_i_TotalFewProf =  RowCount(dw_prof_few)
lv_i_TotalExtraProf  =  RowCount(dw_prof_extra)

FOR lv_i_CurrentFewProf = 1 TO lv_i_TotalFewProf
   SetItem(dw_prof_few, lv_i_CurrentFewProf, "current_preference", 0)
   SetItem(dw_prof_few, lv_i_CurrentFewProf, "current_previous", 0)
NEXT

FOR lv_i_Loop3 = 1 TO lv_i_TotalExtraProf
   FOR lv_i_Loop = 1 TO lv_i_TotalExtraProf
      lv_i_Loop1 = 0
      lv_b_NotEmpty  =  TRUE
      DO WHILE (lv_b_NotEmpty)
         lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_Loop, "section_" + String(lv_i_Loop
1)))
IF ((ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) AND (lv_i_Loop1 - 1 > lv_i_MaxClass)) T
HEN
            lv_i_MaxClass  =  lv_i_Loop1 - 1
            lv_b_NotEmpty = FALSE
            EXIT
         END IF
         IF (lv_i_Loop1 >= 8) THEN
            lv_b_NotEmpty = FALSE
            EXIT
         END IF
      LOOP
   NEXT

   SetSort(dw_prof_extra, "credits D, priority A")
   Sort(dw_prof_extra)

   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)
```

```
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CurrentRow
Integer     lv_i_AddedRow
Integer     lv_i_OtherSection
Integer     lv_i_Priority
Integer     lv_i_TempCourse
Integer     lv_i_CourseNum2
String      lv_s_TempSection
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_Lab
String      lv_s_LabDays1
String      lv_s_LabDays2
String      lv_s_Name
String      lv_s_TimePref
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

lv_i_TotalNumClass   =  RowCount(dw_class_info)
IF (lv_i_TotalNumClass > 0) THEN
   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)

   lv_i_TotalFewProf =  RowCount(dw_prof_few)

   FOR lv_i_CurrentClass = 1 TO lv_i_TotalNumClass
      FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
```

```
        lv_b_Continue  =  TRUE
        lv_b_Next      =  FALSE
        lv_b_Above     =  FALSE
        lv_i_CurrentCourseNum   =  GetItemNumber(dw_class_info, lv_i_CurrentClass, "course_num")

        lv_s_TimePref  =  Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "time_preference"))
        lv_t_StartTime1   =  GetItemTime(dw_class_info, lv_i_CurrentClass, "start_time")
        IF (lv_s_TimePref = "am") THEN
           IF (NOT (lv_t_StartTime1 <= Time(11,20,0))) THEN
              lv_b_Continue  =  FALSE
           END IF
        ELSEIF (lv_s_TimePref = "pm") THEN
           IF (NOT (lv_t_StartTime1 >= Time(11,20,0))) THEN
              lv_b_Continue  =  FALSE
           END IF
        END IF

        IF (lv_b_Continue) THEN
           lv_s_Lab =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab"))

           IF (lv_s_Lab = "y") THEN
              lv_s_SectionNum   =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "section_num"))

              lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
              lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")

              IF (lv_i_CurrentClass + 1 <= lv_i_TotalNumClass) THEN
                 lv_i_CourseNum2   =  GetItemNumber(dw_class_info, lv_i_CurrentClass + 1, "course_num")
                 lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass + 1, "days"))
                 lv_t_StartTime2   =  GetItemTime(dw_class_info, lv_i_CurrentClass + 1, "start_time")
                 lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_CurrentClass + 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t_St
artTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                       lv_b_Next   =  TRUE
                       lv_b_Above  =  FALSE
```

```
                    lv_i_OtherSection = lv_i_CurrentClass + 1
                 END IF
              ELSEIF (lv_i_CurrentClass - 1 >= 1) THEN
                 lv_i_CourseNum2   =  GetItemNumber(dw_class_info, lv_i_CurrentClass - 1, "course_num")
                 lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass - 1, "days"))
                 lv_t_StartTime2   =  GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "start_time")
                 lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_CurrentClass - 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t_St
artTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                    lv_b_Next   =  FALSE
                    lv_b_Above  =  TRUE
                    lv_i_OtherSection = lv_i_CurrentClass - 1
                 END IF
              END IF

              lv_s_LabDays1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "lab_days"))
              lv_t_LabStartTime1   =  GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_start_time")
              lv_t_LabEndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "lab_end_time")

              IF (lv_b_Next OR lv_b_Above) THEN
                 lv_s_LabDays2  =  Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_days"))
lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_start_time")

                 lv_t_LabEndTime2  =  GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_time")
              END IF
           ELSE
              lv_s_SectionNum   =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "section_num"))
              lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
              lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")
              lv_s_LabDays1  =  ""
              lv_t_LabStartTime1   =  Time(0,0,0)
              lv_t_LabEndTime1  =  Time(0,0,0)
              lv_s_LabDays2  =  ""
              lv_t_LabStartTime2   =  Time(0,0,0)
              lv_t_LabEndTime2  =  Time(0,0,0)
```

```
            END IF

            lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentProf, "priority")

lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_StartTime1, l
v_t_EndTime1, &
               lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartTime2, &
               lv_t_LabEndTime2)

            IF (lv_b_FoundClass) THEN
               lv_i_Loop1 = 0
               lv_b_NotEmpty  =  TRUE
               DO WHILE (lv_b_NotEmpty)
                  lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentProf, "section_" + St
ring(lv_i_Loop1)))
                  IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                     lv_b_NotEmpty  =  FALSE
                  END IF
               LOOP

SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1), lv_i_CurrentCourseNu
m)
               SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1), lv_s_SectionNum)

               IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "section_num
"))
SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1 + 1), lv_i_CourseNu
m2)
SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1 + 1), lv_s_Section
Num2)
               END IF
               lv_d_TotalCredits = GetItemDecimal(dw_prof_few, lv_i_CurrentProf, "credits")
               IF (lv_s_Lab = "y") THEN
                  IF (lv_b_Next OR lv_b_Above) THEN
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
                  lv_d_TotalCredits = lv_d_TotalCredits + 2
                  DeleteRow(dw_class_info, lv_i_OtherSection)
               ELSE
                  lv_d_TotalCredits = lv_d_TotalCredits + 1.5
               END IF
            ELSE
               lv_d_TotalCredits = lv_d_TotalCredits + 1
            END IF
            SetItem(dw_prof_few, lv_i_CurrentProf, "credits", lv_d_TotalCredits)

            DeleteRow(dw_class_info, lv_i_CurrentClass)
            lv_i_TotalNumClass   =  RowCount(dw_class_info)
         END IF
      ELSE
         lv_b_Continue  =  TRUE
      END IF

      //Move the professors to the appropriate datawindow (done, extra, or stay at few)
      lv_i_CurrentRow = 1
      FOR lv_i_CurrentProf2 = 1 TO lv_i_TotalFewProf
         lv_d_TotalCredits =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "credits")
         lv_d_NeedCredits  =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "needed_credits")

         IF (lv_d_TotalCredits > lv_d_NeedCredits) THEN
            lv_s_Name   =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
            lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "priority")
lv_i_CurrentPreference=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_preferenc
e")
lv_i_CurrentPrevious=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_previous
")

            lv_i_AddedRow  =  InsertRow(dw_prof_extra, 0)

            SetItem(dw_prof_extra, lv_i_AddedRow, "name", lv_s_Name)
            SetItem(dw_prof_extra, lv_i_AddedRow, "priority", lv_i_Priority)
            SetItem(dw_prof_extra, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
```

```
                SetItem(dw_prof_extra, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
                SetItem(dw_prof_extra, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
                SetItem(dw_prof_extra, lv_i_AddedRow, "credits", lv_d_TotalCredits)

                FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_
i_Loop1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + Str
ing(lv_i_Loop1)))
                   SetItem(dw_prof_extra, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
SetItem(dw_prof_extra, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)

                NEXT

                DeleteRow(dw_prof_few, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredi
ts)) THEN
                lv_s_Name    =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))

                lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

                SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
                SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

                FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_
i_Loop1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + Str
ing(lv_i_Loop1)))
                   SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
                   SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
                NEXT

                DeleteRow(dw_prof_few, lv_i_CurrentRow)
             ELSE
                lv_i_CurrentRow    =  lv_i_CurrentRow + 1
```

```
            END IF
         NEXT
         lv_i_TotalFewProf =  RowCount(dw_prof_few)
         IF ((DeletedCount(dw_class_info) > 0) AND (lv_i_CurrentClass > lv_i_TotalNumClass)) THEN
            EXIT
         END IF
      NEXT
   NEXT
END IF
```

End of Script

Script for: phase5 event
//Moves all unassigned classes (if any) to a separate datawindow

```
//Local Variables
Integer     lv_i_TotalNumClass
Integer     lv_i_Loop
Integer     lv_i_CourseNum
String      lv_s_SectionNum
//End Local Variables

lv_i_TotalNumClass = RowCount(dw_class_info)

IF (lv_i_TotalNumClass > 0) THEN
   FOR lv_i_Loop = 1 TO lv_i_TotalNumClass
      lv_i_CourseNum =  GetItemNumber(dw_class_info, lv_i_Loop, "course_num")
      lv_s_SectionNum   =  Trim(GetItemString(dw_class_info, lv_i_Loop, "section_num"))

      InsertRow(dw_extra_class, 0)
      SetItem(dw_extra_class, lv_i_Loop, "course_num", lv_i_CourseNum)
      SetItem(dw_extra_class, lv_i_Loop, "section_num", lv_s_SectionNum)
   NEXT
```

```
END IF

End of Script


Script for: phase6  event
//Let faculty members with the least amount of credits choose from the last acquired courses
//of the professors with extra credits (based on preference).  After each transfer is made, those
//faculty members are sorted into the faculty members with to many classes, faculty members with
//to few classes, and faculty members with an okay number of classes into the appropriate datawindows.

//Local Variables
Boolean     lv_b_DeleteClass
Boolean     lv_b_Done
Boolean     lv_b_Continue
Boolean     lv_b_Found
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_Exit
Boolean     lv_b_FoundClass
Boolean     lv_b_NotEmpty
Decimal     lv_d_NeedCredits
Decimal     lv_d_TotalCredits
Decimal     lv_d_ExtraTotalCredits
Integer     lv_i_TotalNumClass
Integer     lv_i_TotalFewProf
Integer     lv_i_TotalExtraProf
Integer     lv_i_AddedRow
Integer     lv_i_ClassRow
Integer     lv_i_CurrentRow
Integer     lv_i_CurrentFewProf
Integer     lv_i_CurrentExtraProf
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentPrevious
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
Integer     lv_i_Class
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CourseNum2
Integer     lv_i_TempCourse
Integer     lv_i_PrefCourseNum
Integer     lv_i_OtherSection
Integer     lv_i_Priority
Integer     lv_i_MaxClass = 0
Integer     lv_i_Loop
Integer     lv_i_Loop1
Integer     lv_i_Loop2
Integer     lv_i_Loop3
String      lv_s_Name
String      lv_s_TimePref
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_TempSection
String      lv_s_Lab
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_LabDays1
String      lv_s_LabDays2
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

Retrieve(dw_class_info, s_parms.term, s_parms.department)

SetSort(dw_class_info, "course_num A, section_num A")
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
Sort(dw_class_info)

lv_i_TotalFewProf =  RowCount(dw_prof_few)
lv_i_TotalExtraProf  =  RowCount(dw_prof_extra)

FOR lv_i_CurrentFewProf = 1 TO lv_i_TotalFewProf
   SetItem(dw_prof_few, lv_i_CurrentFewProf, "current_preference", 0)
   SetItem(dw_prof_few, lv_i_CurrentFewProf, "current_previous", 0)
NEXT

FOR lv_i_Loop3 = 1 TO lv_i_TotalExtraProf
   FOR lv_i_Loop = 1 TO lv_i_TotalExtraProf
      lv_i_Loop1 = 0
      lv_b_NotEmpty  =  TRUE
      DO WHILE (lv_b_NotEmpty)
         lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_Loop, "section_" + String(lv_i_Loop
1)))
IF ((ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) AND (lv_i_Loop1 - 1 > lv_i_MaxClass)) T
HEN
            lv_i_MaxClass  =  lv_i_Loop1 - 1
            lv_b_NotEmpty = FALSE
            EXIT
         END IF
         IF (lv_i_Loop1 >= 8) THEN
            lv_b_NotEmpty = FALSE
            EXIT
         END IF
      LOOP
   NEXT

   SetSort(dw_prof_extra, "credits D, priority A")
   Sort(dw_prof_extra)

   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)
```

```
   FOR lv_i_CurrentFewProf = lv_i_TotalFewProf TO 1
      lv_b_Exit    =  FALSE
      lv_b_FoundClass    =  FALSE
      DO WHILE (NOT lv_b_FoundClass)
lv_i_CurrentPreference=GetItemNumber(dw_prof_few, lv_i_CurrentFewProf, "current_preference"
)
         lv_i_CurrentPreference  =  lv_i_CurrentPreference + 1
         SetItem(dw_prof_few, lv_i_CurrentFewProf, "current_preference", lv_i_CurrentPreference)

         IF (lv_i_CurrentPreference > 4) THEN
            //No more preferences -- assign no more classes until phase 3
            EXIT
         ELSEIF (lv_i_CurrentPreference = 1) THEN
lv_i_PrefCourseNum=GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "class_preference_1"
)
         ELSEIF (lv_i_CurrentPreference = 2) THEN
lv_i_PrefCourseNum=GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "class_preference_2"
)
         ELSEIF (lv_i_CurrentPreference = 3) THEN
lv_i_PrefCourseNum=GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "class_preference_3"
)
         ELSEIF (lv_i_CurrentPreference = 4) THEN
lv_i_PrefCourseNum=GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "class_preference_4"
)
         END IF

         lv_i_CurrentClass = lv_i_MaxClass
         lv_i_CurrentExtraProf = 1
         lv_b_Done    =  FALSE
         DO WHILE (NOT lv_b_Done)
            lv_b_Continue  =  TRUE
            lv_b_Next      =  FALSE
            lv_b_Above     =  FALSE
lv_i_CurrentCourseNum=GetItemNumber(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + St
ring(lv_i_CurrentClass))
```

```
lv_s_SectionNum=Trim(GetItemString(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + St
ring(lv_i_CurrentClass)))
            IF (lv_i_CurrentCourseNum = lv_i_PrefCourseNum) THEN
lv_s_TimePref=Trim(GetItemString(dw_prof_info, lv_i_CurrentFewProf, "time_preference"
))

               lv_b_Found = FALSE
               lv_i_ClassRow = 1
               DO WHILE (NOT lv_b_Found)
                  lv_i_TempCourse   =  GetItemNumber(dw_class_info, lv_i_ClassRow, "course_num")
                  lv_s_TempSection  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "section_num"))

IF ((lv_i_TempCourse = lv_i_CurrentCourseNum) AND (lv_s_TempSection = lv_s_SectionNum))
THEN
                     lv_b_Found = TRUE
                     EXIT
                  END IF

                  lv_i_ClassRow = lv_i_ClassRow + 1
                  IF (lv_i_Class > lv_i_TotalNumClass) THEN
                     EXIT
                  END IF
               LOOP

               IF (lv_b_Found) THEN
                  lv_t_StartTime1   =  GetItemTime(dw_class_info, lv_i_ClassRow, "start_time")

                  IF (lv_s_TimePref = "am") THEN
                     IF (NOT (lv_t_StartTime1 <= Time(11,20,0))) THEN
                        lv_b_Continue  =  FALSE
                     END IF
                  ELSEIF (lv_s_TimePref = "pm") THEN
                     IF (NOT (lv_t_StartTime1 >= Time(11,20,0))) THEN
                        lv_b_Continue  =  FALSE
                     END IF
                  END IF
```

```
                IF (lv_b_Continue) THEN
                   lv_s_Lab =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab"))

                   IF (lv_s_Lab = "y") THEN
                      lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "days"))
                      lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "end_time")

                      IF (lv_i_CurrentClass + 1 <= lv_i_TotalNumClass) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_ClassRow + 1, "course_n
um")
                         lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow + 1, "days"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_ClassRow + 1, "start_time
")
lv_t_EndTime2=GetItemTime(dw_class_info, lv_i_ClassRow + 1, "end_time"
)

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND
 (lv_t_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                            lv_b_Next   =  TRUE
                            lv_b_Above  =  FALSE
                            lv_i_OtherSection = lv_i_ClassRow + 1
                         END IF
                      ELSEIF (lv_i_ClassRow - 1 >= 1) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_ClassRow - 1, "course_n
um")
                         lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow - 1, "days"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_ClassRow - 1, "start_time
")
lv_t_EndTime2=GetItemTime(dw_class_info, lv_i_ClassRow - 1, "end_time"
)

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND
 (lv_t_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                            lv_b_Next   =  FALSE
                            lv_b_Above  =  TRUE
```

```
                              lv_i_OtherSection = lv_i_ClassRow - 1
                           END IF
                        END IF

                        lv_s_LabDays1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_days"))
lv_t_LabStartTime1=GetItemTime(dw_class_info, lv_i_ClassRow, "lab_start_time
")
                        lv_t_LabEndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "lab_end_time")

                        IF (lv_b_Next OR lv_b_Above) THEN
lv_s_LabDays2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_d
ays"))
lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_sta
rt_time")
lv_t_LabEndTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_t
ime")
                        END IF
                     ELSE
                        lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "days"))
                        lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "end_time")
                        lv_s_LabDays1  =  ""
                        lv_t_LabStartTime1   =  Time(0,0,0)
                        lv_t_LabEndTime1  =  Time(0,0,0)
                        lv_s_LabDays2  =  ""
                        lv_t_LabStartTime2   =  Time(0,0,0)
                        lv_t_LabEndTime2  =  Time(0,0,0)
                     END IF

                     lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentFewProf, "priority")

lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_Star
tTime1, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartT
ime2, &
                        lv_t_LabEndTime2)
```

```
                    IF (lv_b_FoundClass) THEN
lv_b_DeleteClass = delete_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv
_t_StartTime1, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabSta
rtTime2, &
                        lv_t_LabEndTime2)
                    END IF

                    IF (lv_b_FoundClass AND lv_b_DeleteClass) THEN
                       lv_i_Loop2 = 0
                       lv_b_NotEmpty  =  TRUE
                       DO WHILE (lv_b_NotEmpty)
                          lv_i_Loop2 = lv_i_Loop2 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentFewProf, "se
ction_" + String(lv_i_Loop2)))
                          IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                             lv_b_NotEmpty  =  FALSE
                          END IF
                       LOOP

SetItem(dw_prof_few, lv_i_CurrentFewProf, "course_" + String(lv_i_Loop2), lv_i_Cur
rentCourseNum)
SetItem(dw_prof_few, lv_i_CurrentFewProf, "section_" + String(lv_i_Loop2), lv_s_Se
ctionNum)

SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + String(lv_i_CurrentClass
), 0)
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + String(lv_i_CurrentClas
s), "")

                       IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "se
ction_num"))
SetItem(dw_prof_few, lv_i_CurrentFewProf, "course_" + String(lv_i_Loop2 + 1), l
v_i_CourseNum2)
SetItem(dw_prof_few, lv_i_CurrentFewProf, "section_" + String(lv_i_Loop2 + 1),
```

```
                        IF (lv_b_Next) THEN
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + String(lv_i_Curren
tClass + 1), 0)
SetITem(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + String(lv_i_Curre
ntClass + 1), "")
                        ELSE
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + String(lv_i_Curren
tClass - 1), 0)
SetITem(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + String(lv_i_Curre
ntClass - 1), "")
                        END IF
                     END IF
                     lv_d_TotalCredits = GetItemDecimal(dw_prof_few, lv_i_CurrentFewProf, "credits")
lv_d_ExtraTotalCredits = GetItemDecimal(dw_prof_extra, lv_i_CurrentExtraProf, "cre
dits")
                     IF (lv_s_Lab = "y") THEN
                        IF (lv_b_Next OR lv_b_Above) THEN
                           lv_d_TotalCredits = lv_d_TotalCredits + 2
                           lv_d_ExtraTotalCredits = lv_d_ExtraTotalCredits - 2
                        ELSE
                           lv_d_TotalCredits = lv_d_TotalCredits + 1.5
                           lv_d_ExtraTotalCredits = lv_d_ExtraTotalCredits - 1.5
                        END IF
                     ELSE
                        lv_d_TotalCredits = lv_d_TotalCredits + 1
                        lv_d_ExtraTotalCredits = lv_d_ExtraTotalCredits - 1
                     END IF
                     SetItem(dw_prof_few, lv_i_CurrentFewProf, "credits", lv_d_TotalCredits)
                     SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "credits", lv_d_ExtraTotalCredits)

                     lv_b_Done    =  TRUE
                     lv_i_TotalNumClass    =  RowCount(dw_class_info)
                  END IF
               ELSE
                  lv_b_Continue  =  TRUE
```

```
                END IF
             END IF
          END IF
          lv_i_CurrentExtraProf = lv_i_CurrentExtraProf + 1
          IF (lv_i_CurrentExtraProf > lv_i_TotalExtraProf) THEN
             lv_i_CurrentExtraProf = 1
             lv_i_CurrentClass = lv_i_CurrentClass - 1
             IF (lv_i_CurrentClass < 1) THEN
                lv_b_Done = TRUE
                lv_b_Exit = TRUE
             END IF
          END IF
       LOOP
    LOOP
    IF (lv_b_FoundClass OR lv_b_Exit) THEN
       EXIT
    END IF
 NEXT

//move "done" professors ... recalculate rows in extra and few
 lv_i_CurrentRow = 1
 FOR lv_i_CurrentProf = 1 TO lv_i_TotalExtraProf
    lv_d_TotalCredits =  GetItemDecimal(dw_prof_extra, lv_i_CurrentRow, "credits")
    lv_d_NeedCredits  =  GetItemDecimal(dw_prof_extra, lv_i_CurrentRow, "needed_credits")

    IF (lv_d_TotalCredits < lv_d_NeedCredits - 0.5) THEN
       lv_s_Name    =  Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "name"))
       lv_i_Priority  =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "priority")
       lv_i_CurrentPreference  =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "current_preference")
       lv_i_CurrentPrevious    =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "current_previous")

       lv_i_AddedRow  =  InsertRow(dw_prof_few, 0)

       SetItem(dw_prof_few, lv_i_AddedRow, "name", lv_s_Name)
       SetItem(dw_prof_few, lv_i_AddedRow, "priority", lv_i_Priority)
       SetItem(dw_prof_few, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
```

```
         SetItem(dw_prof_few, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
         SetItem(dw_prof_few, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
         SetItem(dw_prof_few, lv_i_AddedRow, "credits", lv_d_TotalCredits)

         FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "course_" + String(lv_i_Lo
op1))
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "section_" + String(
lv_i_Loop1)))
            SetItem(dw_prof_few, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
            SetItem(dw_prof_few, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
         NEXT

         DeleteRow(dw_prof_extra, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredits)) T
HEN
         lv_s_Name    =  Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "name"))

         lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

         SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
         SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

         FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "course_" + String(lv_i_Lo
op1))
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "section_" + String(
lv_i_Loop1)))
            SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
            SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
         NEXT

         DeleteRow(dw_prof_extra, lv_i_CurrentRow)
      ELSE
         lv_i_CurrentRow    =  lv_i_CurrentRow + 1
      END IF
```

```
   NEXT

   lv_i_CurrentRow = 1
   FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
      lv_d_TotalCredits =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "credits")
      lv_d_NeedCredits  =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "needed_credits")

      IF (lv_d_TotalCredits > lv_d_NeedCredits) THEN
         lv_s_Name    =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
         lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "priority")
         lv_i_CurrentPreference  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_preference")
         lv_i_CurrentPrevious    =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_previous")

         lv_i_AddedRow  =  InsertRow(dw_prof_extra, 0)

         SetItem(dw_prof_extra, lv_i_AddedRow, "name", lv_s_Name)
         SetItem(dw_prof_extra, lv_i_AddedRow, "priority", lv_i_Priority)
         SetItem(dw_prof_extra, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
         SetItem(dw_prof_extra, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
         SetItem(dw_prof_extra, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
         SetItem(dw_prof_extra, lv_i_AddedRow, "credits", lv_d_TotalCredits)

         FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_i_Loop
1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + String(lv
_i_Loop1)))
            SetItem(dw_prof_extra, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
            SetItem(dw_prof_extra, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
         NEXT

         DeleteRow(dw_prof_few, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredits)) T
HEN
         lv_s_Name    =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
```

```
         lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

         SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
         SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

         FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_i_Loop
1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + String(lv
_i_Loop1)))
            SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
            SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
         NEXT

         DeleteRow(dw_prof_few, lv_i_CurrentRow)
      ELSE
         lv_i_CurrentRow   =  lv_i_CurrentRow + 1
      END IF
   NEXT
   lv_i_TotalFewProf =  RowCount(dw_prof_few)
   lv_i_TotalExtraProf = RowCount(dw_prof_extra)
NEXT


End of Script



Script for: phase7  event
//Let faculty members with the least amount of credits choose from the last acquired courses
//of the professors with extra credits (based on previous experience).  After each transfer is made, thos

//faculty members are sorted into the faculty members with to many classes, faculty members with
//to few classes, and faculty members with an okay number of classes into the appropriate datawindows.

//Local Variables
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
Boolean     lv_b_DeleteClass
Boolean     lv_b_Done
Boolean     lv_b_Continue
Boolean     lv_b_Found
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_Exit
Boolean     lv_b_FoundClass
Boolean     lv_b_NotEmpty
Decimal     lv_d_NeedCredits
Decimal     lv_d_TotalCredits
Decimal     lv_d_ExtraTotalCredits
Integer     lv_i_TotalNumClass
Integer     lv_i_TotalFewProf
Integer     lv_i_TotalExtraProf
Integer     lv_i_AddedRow
Integer     lv_i_ClassRow
Integer     lv_i_CurrentRow
Integer     lv_i_CurrentFewProf
Integer     lv_i_CurrentExtraProf
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentPrevious
Integer     lv_i_Class
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CourseNum2
Integer     lv_i_TempCourse
Integer     lv_i_PrevCourseNum
Integer     lv_i_OtherSection
Integer     lv_i_Priority
Integer     lv_i_MaxClass = 0
Integer     lv_i_Loop
Integer     lv_i_Loop1
Integer     lv_i_Loop2
Integer     lv_i_Loop3
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
String      lv_s_Name
String      lv_s_TimePref
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_TempSection
String      lv_s_Lab
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_LabDays1
String      lv_s_LabDays2
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

lv_i_TotalFewProf =  RowCount(dw_prof_few)
lv_i_TotalExtraProf  =  RowCount(dw_prof_extra)

FOR lv_i_Loop3 = 1 TO lv_i_TotalExtraProf
   FOR lv_i_Loop = 1 TO lv_i_TotalExtraProf
      lv_i_Loop1 = 0
      lv_b_NotEmpty  =  TRUE
      DO WHILE (lv_b_NotEmpty)
         lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_Loop, "section_" + String(lv_i_Loop
1)))
IF ((ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) AND (lv_i_Loop1 - 1 > lv_i_MaxClass)) T
HEN
            lv_i_MaxClass  =  lv_i_Loop1 - 1
            lv_b_NotEmpty = FALSE
            EXIT
```

```
         END IF
         IF (lv_i_Loop1 >= 8) THEN
            lv_b_NotEmpty = FALSE
            EXIT
         END IF
      LOOP
   NEXT

   SetSort(dw_prof_extra, "credits D, priority A")
   Sort(dw_prof_extra)

   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)

   FOR lv_i_CurrentFewProf = 1 TO lv_i_TotalFewProf
      lv_b_Exit    =  FALSE
      lv_b_FoundClass    =  FALSE
      DO WHILE (NOT lv_b_FoundClass)
         lv_i_CurrentPrevious =  GetItemNumber(dw_prof_few, lv_i_CurrentFewProf, "current_previous")
         lv_i_CurrentPrevious =  lv_i_CurrentPrevious + 1
         SetItem(dw_prof_few, lv_i_CurrentFewProf, "current_previous", lv_i_CurrentPrevious)

         IF (lv_i_CurrentPrevious > 4) THEN
            EXIT
         ELSEIF (lv_i_CurrentPrevious = 1) THEN
            lv_i_PrevCourseNum    =  GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "previous_class_1")
         ELSEIF (lv_i_CurrentPrevious = 2) THEN
            lv_i_PrevCourseNum    =  GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "previous_class_2")
         ELSEIF (lv_i_CurrentPrevious = 3) THEN
            lv_i_PrevCourseNum    =  GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "previous_class_3")
         ELSEIF (lv_i_CurrentPrevious = 4) THEN
            lv_i_PrevCourseNum    =  GetItemNumber(dw_prof_info, lv_i_CurrentFewProf, "previous_class_4")
         END IF

         lv_i_CurrentClass = lv_i_MaxClass
         lv_i_CurrentExtraProf = 1
```

```
         lv_b_Done    =  FALSE
         DO WHILE (NOT lv_b_Done)
            lv_b_Continue  =  TRUE
            lv_b_Next      =  FALSE
            lv_b_Above     =  FALSE
lv_i_CurrentCourseNum=GetItemNumber(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + St
ring(lv_i_CurrentClass))
lv_s_SectionNum=Trim(GetItemString(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + St
ring(lv_i_CurrentClass)))
            IF (lv_i_CurrentCourseNum = lv_i_PrevCourseNum) THEN
lv_s_TimePref=Trim(GetItemString(dw_prof_info, lv_i_CurrentFewProf, "time_preference"
))

               lv_b_Found = FALSE
               lv_i_ClassRow = 1
               DO WHILE (NOT lv_b_Found)
                  lv_i_TempCourse    =  GetItemNumber(dw_class_info, lv_i_ClassRow, "course_num")
                  lv_s_TempSection   =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "section_num"))

IF ((lv_i_TempCourse = lv_i_CurrentCourseNum) AND (lv_s_TempSection = lv_s_SectionNum))
THEN
                     lv_b_Found = TRUE
                     EXIT
                  END IF

                  lv_i_ClassRow = lv_i_ClassRow + 1
                  IF (lv_i_Class > lv_i_TotalNumClass) THEN
                     EXIT
                  END IF
               LOOP

               IF (lv_b_Found) THEN
                  lv_t_StartTime1    =  GetItemTime(dw_class_info, lv_i_ClassRow, "start_time")

                  IF (lv_s_TimePref = "am") THEN
                     IF (NOT (lv_t_StartTime1 <= Time(11,20,0))) THEN
```

```
                        lv_b_Continue  =  FALSE
                     END IF
                  ELSEIF (lv_s_TimePref = "pm") THEN
                     IF (NOT (lv_t_StartTime1 >= Time(11,20,0))) THEN
                        lv_b_Continue  =  FALSE
                     END IF
                  END IF

                  IF (lv_b_Continue) THEN
                     lv_s_Lab =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab"))

                     IF (lv_s_Lab = "y") THEN
                        lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "days"))
                        lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "end_time")

                        IF (lv_i_CurrentClass + 1 <= lv_i_TotalNumClass) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_ClassRow + 1, "course_n
um")
                           lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow + 1, "days"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_ClassRow + 1, "start_time
")
lv_t_EndTime2=GetItemTime(dw_class_info, lv_i_ClassRow + 1, "end_time"
)

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND
 (lv_t_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                              lv_b_Next   =  TRUE
                              lv_b_Above  =  FALSE
                              lv_i_OtherSection = lv_i_ClassRow + 1
                           END IF
                        ELSEIF (lv_i_ClassRow - 1 >= 1) THEN
lv_i_CourseNum2=GetItemNumber(dw_class_info, lv_i_ClassRow - 1, "course_n
um")
                           lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow - 1, "days"))
lv_t_StartTime2=GetItemTime(dw_class_info, lv_i_ClassRow - 1, "start_time
")
```

```
lv_t_EndTime2=GetItemTime(dw_class_info, lv_i_ClassRow - 1, "end_time"
)

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND
 (lv_t_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                              lv_b_Next   =  FALSE
                              lv_b_Above  =  TRUE
                              lv_i_OtherSection = lv_i_ClassRow - 1
                           END IF
                        END IF

                        lv_s_LabDays1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_days"))
lv_t_LabStartTime1=GetItemTime(dw_class_info, lv_i_ClassRow, "lab_start_time
")
                        lv_t_LabEndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "lab_end_time")

                        IF (lv_b_Next OR lv_b_Above) THEN
lv_s_LabDays2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_d
ays"))
lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_sta
rt_time")
lv_t_LabEndTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_t
ime")
                        END IF
                     ELSE
                        lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "days"))
                        lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "end_time")
                        lv_s_LabDays1  =  ""
                        lv_t_LabStartTime1   =  Time(0,0,0)
                        lv_t_LabEndTime1  =  Time(0,0,0)
                        lv_s_LabDays2  =  ""
                        lv_t_LabStartTime2   =  Time(0,0,0)
                        lv_t_LabEndTime2  =  Time(0,0,0)
                     END IF

                     lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentFewProf, "priority")
```

```
lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_Star
tTime1, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartT
ime2, &
                        lv_t_LabEndTime2)

                     IF (lv_b_FoundClass) THEN
lv_b_DeleteClass = delete_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv
_t_StartTime1, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabSta
rtTime2, &
                           lv_t_LabEndTime2)
                     END IF

                     IF (lv_b_FoundClass AND lv_b_DeleteClass) THEN
                        lv_i_Loop2 = 0
                        lv_b_NotEmpty  =  TRUE
                        DO WHILE (lv_b_NotEmpty)
                           lv_i_Loop2 = lv_i_Loop2 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentFewProf, "se
ction_" + String(lv_i_Loop2)))
                           IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                              lv_b_NotEmpty  =  FALSE
                           END IF
                        LOOP

SetItem(dw_prof_few, lv_i_CurrentFewProf, "course_" + String(lv_i_Loop2), lv_i_Cur
rentCourseNum)
SetItem(dw_prof_few, lv_i_CurrentFewProf, "section_" + String(lv_i_Loop2), lv_s_Se
ctionNum)
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + String(lv_i_CurrentClass
), 0)
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + String(lv_i_CurrentClas
s), "")
```

```
                        IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "se
ction_num"))
SetItem(dw_prof_few, lv_i_CurrentFewProf, "course_" + String(lv_i_Loop2 + 1), l
v_i_CourseNum2)
SetItem(dw_prof_few, lv_i_CurrentFewProf, "section_" + String(lv_i_Loop2 + 1),
lv_s_SectionNum2)

                           IF (lv_b_Next) THEN
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + String(lv_i_Curren
tClass + 1), 0)
SetITem(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + String(lv_i_Curre
ntClass + 1), "")
                           ELSE
SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "course_" + String(lv_i_Curren
tClass - 1), 0)
SetITem(dw_prof_extra, lv_i_CurrentExtraProf, "section_" + String(lv_i_Curre
ntClass - 1), "")
                           END IF
                        END IF
                        lv_d_TotalCredits = GetItemDecimal(dw_prof_few, lv_i_CurrentFewProf, "credits")
lv_d_ExtraTotalCredits = GetItemDecimal(dw_prof_extra, lv_i_CurrentExtraProf, "cre
dits")
                        IF (lv_s_Lab = "y") THEN
                           IF (lv_b_Next OR lv_b_Above) THEN
                              lv_d_TotalCredits = lv_d_TotalCredits + 2
                              lv_d_ExtraTotalCredits = lv_d_ExtraTotalCredits - 2
                           ELSE
                              lv_d_TotalCredits = lv_d_TotalCredits + 1.5
                              lv_d_ExtraTotalCredits = lv_d_ExtraTotalCredits - 1.5
                           END IF
                        ELSE
                           lv_d_TotalCredits = lv_d_TotalCredits + 1
                           lv_d_ExtraTotalCredits = lv_d_ExtraTotalCredits - 1
                        END IF
                        SetItem(dw_prof_few, lv_i_CurrentFewProf, "credits", lv_d_TotalCredits)
```

```
                        SetItem(dw_prof_extra, lv_i_CurrentExtraProf, "credits", lv_d_ExtraTotalCredits)

                        lv_b_Done    =  TRUE
                        lv_i_TotalNumClass    =  RowCount(dw_class_info)
                     END IF
                  ELSE
                     lv_b_Continue  =  TRUE
                  END IF
               END IF
            END IF
            lv_i_CurrentExtraProf = lv_i_CurrentExtraProf + 1
            IF (lv_i_CurrentExtraProf > lv_i_TotalExtraProf) THEN
               lv_i_CurrentExtraProf = 1
               lv_i_CurrentClass = lv_i_CurrentClass - 1
               IF (lv_i_CurrentClass < 1) THEN
                  lv_b_Done = TRUE
                  lv_b_Exit = TRUE
               END IF
            END IF
         LOOP
      LOOP
      IF (lv_b_FoundClass OR lv_b_Exit) THEN
         EXIT
      END IF
   NEXT

//move "done" professors ... recalculate rows in extra and few
   lv_i_CurrentRow = 1
   FOR lv_i_CurrentProf = 1 TO lv_i_TotalExtraProf
      lv_d_TotalCredits =  GetItemDecimal(dw_prof_extra, lv_i_CurrentRow, "credits")
      lv_d_NeedCredits  =  GetItemDecimal(dw_prof_extra, lv_i_CurrentRow, "needed_credits")

      IF (lv_d_TotalCredits < lv_d_NeedCredits - 0.5) THEN
         lv_s_Name    =  Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "name"))
         lv_i_Priority  =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "priority")
         lv_i_CurrentPreference  =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "current_preference")
```

```
        lv_i_CurrentPrevious    =  GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "current_previous")

        lv_i_AddedRow  =  InsertRow(dw_prof_few, 0)

        SetItem(dw_prof_few, lv_i_AddedRow, "name", lv_s_Name)
        SetItem(dw_prof_few, lv_i_AddedRow, "priority", lv_i_Priority)
        SetItem(dw_prof_few, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
        SetItem(dw_prof_few, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
        SetItem(dw_prof_few, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
        SetItem(dw_prof_few, lv_i_AddedRow, "credits", lv_d_TotalCredits)

        FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "course_" + String(lv_i_Lo
op1))
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "section_" + String(
lv_i_Loop1)))
           SetItem(dw_prof_few, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
           SetItem(dw_prof_few, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
        NEXT

        DeleteRow(dw_prof_extra, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredits)) T
HEN
        lv_s_Name    =  Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "name"))

        lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

        SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
        SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

        FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_extra, lv_i_CurrentRow, "course_" + String(lv_i_Lo
op1))
lv_s_TempSection=Trim(GetItemString(dw_prof_extra, lv_i_CurrentRow, "section_" + String(
lv_i_Loop1)))
           SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

```
            SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
         NEXT

         DeleteRow(dw_prof_extra, lv_i_CurrentRow)
      ELSE
         lv_i_CurrentRow   =  lv_i_CurrentRow + 1
      END IF
   NEXT

   lv_i_CurrentRow = 1
   FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
      lv_d_TotalCredits =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "credits")
      lv_d_NeedCredits  =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "needed_credits")

      IF (lv_d_TotalCredits > lv_d_NeedCredits) THEN
         lv_s_Name   =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
         lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "priority")
         lv_i_CurrentPreference  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_preference")
         lv_i_CurrentPrevious    =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_previous")

         lv_i_AddedRow  =  InsertRow(dw_prof_extra, 0)

         SetItem(dw_prof_extra, lv_i_AddedRow, "name", lv_s_Name)
         SetItem(dw_prof_extra, lv_i_AddedRow, "priority", lv_i_Priority)
         SetItem(dw_prof_extra, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
         SetItem(dw_prof_extra, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
         SetItem(dw_prof_extra, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
         SetItem(dw_prof_extra, lv_i_AddedRow, "credits", lv_d_TotalCredits)

         FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_i_Loop
1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + String(lv
_i_Loop1)))
            SetItem(dw_prof_extra, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
            SetItem(dw_prof_extra, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
```

```
         NEXT

         DeleteRow(dw_prof_few, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCredits)) T
HEN
         lv_s_Name    =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))

         lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

         SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
         SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

         FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(lv_i_Loop
1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" + String(lv
_i_Loop1)))
            SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
            SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSection)
         NEXT

         DeleteRow(dw_prof_few, lv_i_CurrentRow)
      ELSE
         lv_i_CurrentRow    =  lv_i_CurrentRow + 1
      END IF
   NEXT
   lv_i_TotalFewProf =  RowCount(dw_prof_few)
   lv_i_TotalExtraProf = RowCount(dw_prof_extra)
NEXT


End of Script


Script for: phase8  event
```

```
//After each class is assigned, those faculty members are sorted into the faculty members with to many cl
sses,
//faculty members with to few classes, and faculty members with an okay number of classes
//into the appropriate datawindows.

//Local Variables
Boolean     lv_b_Continue
Boolean     lv_b_Next
Boolean     lv_b_Above
Boolean     lv_b_Found
Boolean     lv_b_FoundClass
Boolean     lv_b_NotEmpty
Decimal     lv_d_TotalCredits
Decimal     lv_d_NeedCredits
Integer     lv_i_ClassRow
Integer     lv_i_TotalNumClass
Integer     lv_i_TotalFewProf
Integer     lv_i_CurrentClass
Integer     lv_i_CurrentProf
Integer     lv_i_CurrentProf2
Integer     lv_i_CurrentPreference
Integer     lv_i_CurrentPrevious
Integer     lv_i_CurrentCourseNum
Integer     lv_i_CourseNum2
Integer     lv_i_OtherSection
Integer     lv_i_AddedRow
Integer     lv_i_TempCourse
Integer     lv_i_Priority
Integer     lv_i_CurrentRow
Integer     lv_i_Loop1
String      lv_s_Name
String      lv_s_TempSection
String      lv_s_SectionNum
String      lv_s_SectionNum2
String      lv_s_TimePref
String      lv_s_Days1
String      lv_s_Days2
String      lv_s_Lab
String      lv_s_LabDays1
String      lv_s_LabDays2
```

```
Time        lv_t_StartTime1
Time        lv_t_StartTime2
Time        lv_t_EndTime1
Time        lv_t_EndTime2
Time        lv_t_LabStartTime1
Time        lv_t_LabStartTime2
Time        lv_t_LabEndTime1
Time        lv_t_LabEndTime2
//End Local Variables

lv_i_TotalNumClass   =  RowCount(dw_extra_class)
IF (lv_i_TotalNumClass > 0) THEN
   SetSort(dw_prof_few, "credits A, priority A")
   Sort(dw_prof_few)

   lv_i_TotalFewProf =  RowCount(dw_prof_few)

   FOR lv_i_CurrentClass = 1 TO lv_i_TotalNumClass
      FOR lv_i_CurrentProf = 1 TO lv_i_TotalFewProf
         lv_b_Continue  =  TRUE
         lv_b_Next      =  FALSE
         lv_b_Above     =  FALSE
         lv_i_CurrentCourseNum   =  GetItemNumber(dw_extra_class, lv_i_CurrentClass, "course_num")
         lv_s_SectionNum   =  Trim(GetItemString(dw_extra_class, lv_i_CurrentClass, "section_num"))

         lv_s_TimePref  =  Trim(GetItemString(dw_prof_info, lv_i_CurrentProf, "time_preference"))

         lv_b_Found = FALSE
         lv_i_ClassRow = 1
         DO WHILE (NOT lv_b_Found)
            lv_i_TempCourse   =  GetItemNumber(dw_class_info, lv_i_ClassRow, "course_num")
            lv_s_TempSection  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "section_num"))

            IF ((lv_i_TempCourse = lv_i_CurrentCourseNum) AND (lv_s_TempSection = lv_s_SectionNum)) THEN
               lv_b_Found = TRUE
               EXIT
```

```
            END IF

            lv_i_ClassRow = lv_i_ClassRow + 1
            IF (lv_i_ClassRow > lv_i_TotalNumClass) THEN
               EXIT
            END IF
         LOOP

         IF (lv_b_Found) THEN
            lv_t_StartTime1   =  GetItemTime(dw_class_info, lv_i_ClassRow, "start_time")
            IF (lv_s_TimePref = "am") THEN
               IF (NOT (lv_t_StartTime1 <= Time(11,20,0))) THEN
                  lv_b_Continue  =  FALSE
               END IF
            ELSEIF (lv_s_TimePref = "pm") THEN
               IF (NOT (lv_t_StartTime1 >= Time(11,20,0))) THEN
                  lv_b_Continue  =  FALSE
               END IF
            END IF

            IF (lv_b_Continue) THEN
               lv_s_Lab =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab"))

               IF (lv_s_Lab = "y") THEN
                  lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "days"))
                  lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "end_time")

                  IF (lv_i_ClassRow + 1 <= lv_i_TotalNumClass) THEN
                     lv_i_CourseNum2   =  GetItemNumber(dw_class_info, lv_i_ClassRow + 1, "course_num")
                     lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow + 1, "days"))
                     lv_t_StartTime2   =  GetItemTime(dw_class_info, lv_i_ClassRow + 1, "start_time")
                     lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_ClassRow + 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t
_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                        lv_b_Next   =  TRUE
```

```
                        lv_b_Above  =  FALSE
                        lv_i_OtherSection = lv_i_ClassRow + 1
                     END IF
                  ELSEIF (lv_i_ClassRow - 1 >= 1) THEN
                     lv_i_CourseNum2   =  GetItemNumber(dw_class_info, lv_i_ClassRow - 1, "course_num")
                     lv_s_Days2  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow - 1, "days"))
                     lv_t_StartTime2   =  GetItemTime(dw_class_info, lv_i_ClassRow - 1, "start_time")
                     lv_t_EndTime2     =  GetItemTime(dw_class_info, lv_i_ClassRow - 1, "end_time")

IF ((lv_i_CourseNum2 = lv_i_CurrentCourseNum) AND (lv_s_Days1 = lv_s_Days2) AND (lv_t
_StartTime1 = lv_t_StartTime2) AND (lv_t_EndTime1 = lv_t_EndTime2)) THEN
                        lv_b_Next   =  FALSE
                        lv_b_Above  =  TRUE
                        lv_i_OtherSection = lv_i_ClassRow - 1
                     END IF
                  END IF

                  lv_s_LabDays1  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_days"))
                  lv_t_LabStartTime1   =  GetItemTime(dw_class_info, lv_i_ClassRow, "lab_start_time")
                  lv_t_LabEndTime1  =  GetItemTime(dw_class_info, lv_i_ClassRow, "lab_end_time")

                  IF (lv_b_Next OR lv_b_Above) THEN
lv_s_LabDays2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "lab_days"))

lv_t_LabStartTime2=GetItemTime(dw_class_info, lv_i_OtherSection, "lab_start_tim
e")
                     lv_t_LabEndTime2  =  GetItemTime(dw_class_info, lv_i_OtherSection, "lab_end_time")
                  END IF
               ELSE
                  lv_s_Days1  =  Trim(GetItemString(dw_class_info, lv_i_CurrentClass, "days"))
                  lv_t_EndTime1  =  GetItemTime(dw_class_info, lv_i_CurrentClass, "end_time")
                  lv_s_LabDays1  =  ""
                  lv_t_LabStartTime1   =  Time(0,0,0)
                  lv_t_LabEndTime1  =  Time(0,0,0)
                  lv_s_LabDays2  =  ""
                  lv_t_LabStartTime2   =  Time(0,0,0)
```

```
                lv_t_LabEndTime2  =  Time(0,0,0)
             END IF

             lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentProf, "priority")

lv_b_FoundClass = add_class_lab(iv_ia_ProfClass, lv_i_Priority, lv_s_Days1, lv_t_StartTime1
, lv_t_EndTime1, &
lv_s_LabDays1, lv_t_LabStartTime1, lv_t_LabEndTime1, lv_s_LabDays2, lv_t_LabStartTime2,
&
                lv_t_LabEndTime2)

             IF (lv_b_FoundClass) THEN
                lv_i_Loop1 = 0
                lv_b_NotEmpty  =  TRUE
                DO WHILE (lv_b_NotEmpty)
                   lv_i_Loop1 = lv_i_Loop1 + 1
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentProf, "section_" +
 String(lv_i_Loop1)))
                   IF (ISNull(lv_s_TempSection) OR (lv_s_TempSection = "")) THEN
                      lv_b_NotEmpty  =  FALSE
                   END IF
                LOOP

SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1), lv_i_CurrentCours
eNum)
SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1), lv_s_SectionNum)


                IF (lv_b_Next OR lv_b_Above) THEN
lv_s_SectionNum2=Trim(GetItemString(dw_class_info, lv_i_OtherSection, "section_
num"))
SetItem(dw_prof_few, lv_i_CurrentProf, "course_" + String(lv_i_Loop1 + 1), lv_i_Cours
eNum2)
SetItem(dw_prof_few, lv_i_CurrentProf, "section_" + String(lv_i_Loop1 + 1), lv_s_Sect
ionNum2)
                END IF
```

```
                lv_d_TotalCredits = GetItemDecimal(dw_prof_few, lv_i_CurrentProf, "credits")
                IF (lv_s_Lab = "y") THEN
                   IF (lv_b_Next OR lv_b_Above) THEN
                      lv_d_TotalCredits = lv_d_TotalCredits + 2
                      DeleteRow(dw_extra_class, lv_i_OtherSection)
                   ELSE
                      lv_d_TotalCredits = lv_d_TotalCredits + 1.5
                   END IF
                ELSE
                   lv_d_TotalCredits = lv_d_TotalCredits + 1
                END IF
                SetItem(dw_prof_few, lv_i_CurrentProf, "credits", lv_d_TotalCredits)

                DeleteRow(dw_extra_class, lv_i_ClassRow)

                lv_i_TotalNumClass   =  RowCount(dw_extra_class)

             END IF
          ELSE
             lv_b_Continue  =  TRUE
          END IF

          //Move the professors to the appropriate datawindow (done, extra, or stay at few)
          lv_i_CurrentRow = 1
          FOR lv_i_CurrentProf2 = 1 TO lv_i_TotalFewProf
             lv_d_TotalCredits =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "credits")
             lv_d_NeedCredits  =  GetItemDecimal(dw_prof_few, lv_i_CurrentRow, "needed_credits")

             IF (lv_d_TotalCredits > lv_d_NeedCredits) THEN
                lv_s_Name    =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))
                lv_i_Priority  =  GetItemNumber(dw_prof_few, lv_i_CurrentRow, "priority")
lv_i_CurrentPreference=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_prefer
ence")
lv_i_CurrentPrevious=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "current_previ
ous")
```

```
                    lv_i_AddedRow  =  InsertRow(dw_prof_extra, 0)

                    SetItem(dw_prof_extra, lv_i_AddedRow, "name", lv_s_Name)
                    SetItem(dw_prof_extra, lv_i_AddedRow, "priority", lv_i_Priority)
                    SetItem(dw_prof_extra, lv_i_AddedRow, "needed_credits", lv_d_NeedCredits)
                    SetItem(dw_prof_extra, lv_i_AddedRow, "current_preference", lv_i_CurrentPreference)
                    SetItem(dw_prof_extra, lv_i_AddedRow, "current_previous", lv_i_CurrentPrevious)
                    SetItem(dw_prof_extra, lv_i_AddedRow, "credits", lv_d_TotalCredits)

                    FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(
lv_i_Loop1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" +
String(lv_i_Loop1)))
SetItem(dw_prof_extra, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse
)
SetItem(dw_prof_extra, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSecti
on)
                    NEXT

                    DeleteRow(dw_prof_few, lv_i_CurrentRow)
ELSEIF ((lv_d_TotalCredits >= lv_d_NeedCredits - 0.5) AND (lv_d_TotalCredits <= lv_d_NeedCr
edits)) THEN
                    lv_s_Name   =  Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "name"))

                    lv_i_AddedRow  =  InsertRow(dw_prof_okay, 0)

                    SetItem(dw_prof_okay, lv_i_AddedRow, "name", lv_s_Name)
                    SetItem(dw_prof_okay, lv_i_AddedRow, "credits", lv_d_TotalCredits)

                    FOR lv_i_Loop1 = 1 TO 8
lv_i_TempCourse=GetItemNumber(dw_prof_few, lv_i_CurrentRow, "course_" + String(
lv_i_Loop1))
lv_s_TempSection=Trim(GetItemString(dw_prof_few, lv_i_CurrentRow, "section_" +
String(lv_i_Loop1)))
SetItem(dw_prof_okay, lv_i_AddedRow, "course_" + String(lv_i_Loop1), lv_i_TempCourse)
```

```
Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:37:42

SetItem(dw_prof_okay, lv_i_AddedRow, "section_" + String(lv_i_Loop1), lv_s_TempSectio
n)
                  NEXT

                  DeleteRow(dw_prof_few, lv_i_CurrentRow)
               ELSE
                  lv_i_CurrentRow   =  lv_i_CurrentRow + 1
               END IF
            NEXT
            lv_i_TotalFewProf =  RowCount(dw_prof_few)
            IF ((DeletedCount(dw_extra_class) > 0) AND (lv_i_CurrentClass > lv_i_TotalNumClass)) THEN
               EXIT
            END IF
         END IF
      NEXT
   NEXT
END IF


End of Script


Script for: phase9  event
//Move all assigned classes to the done datawindow with the faculty member assigned to the class.
//If any classes remain in the extra class datawindow, notify the user of the remaining classes.

//Local Variables
Boolean     lv_b_Continue
Boolean     lv_b_Found
DataWindow  lv_dw_Current
Integer     lv_i_ExtraClasses
Integer     lv_i_Loop
Integer     lv_i_ClassRow
Integer     lv_i_TotalRows
Integer     lv_i_CurrentRow
```

```
Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:37:42

Integer     lv_i_InsertedRow
Integer     lv_i_CurrentColumn
Integer     lv_i_MaxColumn
Integer     lv_i_TotalNumClass
Integer     lv_i_TempCourse
Integer     lv_i_CourseNum
Integer     lv_i_MaxCredits
Integer     lv_i_MinCredits
Integer     lv_i_ClassLimit
Integer     lv_i_LabMaxCredits
Integer     lv_i_LabMinCredits
String      lv_s_ProfessorName
String      lv_s_TempSection
String      lv_s_MessageString
String      lv_s_Term
String      lv_s_Department
String      lv_s_SectionNum
String      lv_s_CourseName
String      lv_s_Days
String      lv_s_Location
String      lv_s_Building
String      lv_s_Room
String      lv_s_Flags
String      lv_s_Lab
String      lv_s_LabDays
String      lv_s_LabLocation
String      lv_s_LabBuilding
String      lv_s_LabRoom
Time        lv_t_StartTime
Time        lv_t_EndTime
Time        lv_t_LabStartTime
Time        lv_t_LabEndTime
//End Local Variables

Retrieve(dw_class_info, s_parms.term, s_parms.department)
SetSort(dw_class_info, "course_num A, section_num A")
```

```
Sort(dw_class_info)
lv_i_TotalNumClass   =  RowCount(dw_class_info)

FOR lv_i_Loop = 1 TO 3
   IF (lv_i_Loop = 1) THEN
      lv_dw_Current = dw_prof_extra
      lv_i_MaxColumn = 8
   ELSEIF (lv_i_Loop = 2) THEN
      lv_dw_Current = dw_prof_okay
      lv_i_MaxColumn = 4
   ELSEIF (lv_i_Loop = 3) THEN
      lv_dw_Current = dw_prof_few
      lv_i_MaxColumn = 8
   END IF

   lv_i_TotalRows =  RowCount(lv_dw_Current)

   FOR lv_i_CurrentRow = 1 TO lv_i_TotalRows
      lv_s_ProfessorName   =  Trim(GetItemString(lv_dw_Current, lv_i_CurrentRow, "name"))
      FOR lv_i_CurrentColumn = 1 TO lv_i_MaxColumn
         lv_b_Continue  =  FALSE
lv_s_SectionNum=Trim(GetItemString(lv_dw_Current, lv_i_CurrentRow, "section_" + String(lv_i
_CurrentColumn)))
         IF (NOT (IsNull(lv_s_SectionNum) OR (lv_s_SectionNum = ""))) THEN
            lv_b_Continue  =  TRUE
         END IF

         IF (lv_b_Continue) THEN
lv_i_CourseNum=GetItemNumber(lv_dw_Current, lv_i_CurrentRow, "course_" + String(lv_i_Cur
rentColumn))

            lv_b_Found = FALSE
            lv_i_ClassRow = 0
            DO WHILE (NOT lv_b_Found)
               lv_i_ClassRow = lv_i_ClassRow + 1
               lv_i_TempCourse   =  GetItemNumber(dw_class_info, lv_i_ClassRow, "course_num")
```

```
            lv_s_TempSection  =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "section_num"))

            IF ((lv_i_TempCourse = lv_i_CourseNum) AND (lv_s_TempSection = lv_s_SectionNum)) THEN
               lv_b_Found = TRUE
               EXIT
            END IF

            IF (lv_i_ClassRow = lv_i_TotalNumClass) THEN
               EXIT
            END IF
         LOOP

         IF (lv_b_Found) THEN
            lv_s_Term            =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "term"))
            lv_s_Department      =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "department"))
            lv_s_CourseName      =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "name"))
            lv_s_Days            =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "days"))
            lv_t_StartTime       =  GetItemTime(dw_class_info, lv_i_ClassRow, "start_time")
            lv_t_EndTime         =  GetItemTime(dw_class_info, lv_i_ClassRow, "end_time")
            lv_s_Location        =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "location"))
            lv_i_MaxCredits      =  GetItemNumber(dw_class_info, lv_i_ClassRow, "max_credits")
            lv_i_MinCredits      =  GetItemNumber(dw_class_info, lv_i_ClassRow, "min_credits")
            lv_s_Building        =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "building"))
            lv_s_Room            =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "room"))
            lv_i_ClassLimit      =  GetItemNumber(dw_class_info, lv_i_ClassRow, "class_limit")
            lv_s_Flags           =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "flags"))

            lv_s_Lab             =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab"))
            IF (lv_s_lab = "y") THEN
               lv_s_LabDays         =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_days"))
               lv_t_LabStartTime    =  GetItemTime(dw_class_info, lv_i_ClassRow, "lab_start_time")
               lv_t_LabEndTime      =  GetItemTime(dw_class_info, lv_i_ClassRow, "lab_end_time")
lv_s_LabLocation=Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_location
"))
               lv_i_LabMaxCredits   =  GetItemNumber(dw_class_info, lv_i_ClassRow, "lab_max_credits")
               lv_i_LabMinCredits   =  GetItemNumber(dw_class_info, lv_i_ClassRow, "lab min credits")
```

```
lv_s_LabBuilding=Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_building
"))
                lv_s_LabRoom          =  Trim(GetItemString(dw_class_info, lv_i_ClassRow, "lab_room"))
            END IF

            lv_i_InsertedRow  =  InsertRow(dw_final_classes, 0)

            SetItem(dw_final_classes, lv_i_InsertedRow, "term", lv_s_Term)
            SetItem(dw_final_classes, lv_i_InsertedRow, "department", lv_s_Department)
            SetItem(dw_final_classes, lv_i_InsertedRow, "course_num", lv_i_CourseNum)
            SetItem(dw_final_classes, lv_i_InsertedRow, "section_num", lv_s_SectionNum)
            SetItem(dw_final_classes, lv_i_InsertedRow, "name", lv_s_CourseName)
            SetItem(dw_final_classes, lv_i_InsertedRow, "days", lv_s_Days)
            SetItem(dw_final_classes, lv_i_InsertedRow, "start_time", lv_t_StartTime)
            SetItem(dw_final_classes, lv_i_InsertedRow, "end_time", lv_t_EndTime)
            SetItem(dw_final_classes, lv_i_InsertedRow, "location", lv_s_Location)
            SetItem(dw_final_classes, lv_i_InsertedRow, "max_credits", lv_i_MaxCredits)
            SetItem(dw_final_classes, lv_i_InsertedRow, "min_credits", lv_i_MinCredits)
            SetItem(dw_final_classes, lv_i_InsertedRow, "building", lv_s_Building)
            SetItem(dw_final_classes, lv_i_InsertedRow, "room", lv_s_Room)
            SetItem(dw_final_classes, lv_i_InsertedRow, "class_limit", lv_i_ClassLimit)
            SetItem(dw_final_classes, lv_i_InsertedRow, "flags", lv_s_Flags)
            SetItem(dw_final_classes, lv_i_InsertedRow, "professor", lv_s_ProfessorName)

            IF (lv_s_Lab = "y") THEN
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_days", lv_s_LabDays)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_start_time", lv_t_LabStartTime)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_end_time", lv_t_LabEndTime)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_location", lv_s_LabLocation)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_max_credits", lv_i_LabMaxCredits)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_min_credits", lv_i_LabMinCredits)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_building", lv_s_LabBuilding)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_room", lv_s_LabRoom)
               SetItem(dw_final_classes, lv_i_InsertedRow, "lab_professor", lv_s_ProfessorName)
            END IF
         END IF
```

```
Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:37:42

         END IF
      NEXT
   NEXT
NEXT

lv_i_ExtraClasses =  RowCount(dw_extra_class)
IF (lv_i_ExtraClasses > 0) THEN
   lv_s_MessageString   =  "Unassigned classes include:~n"
   FOR lv_i_Loop = 1 TO lv_i_ExtraClasses
      lv_i_TempCourse   =  GetItemNumber(dw_extra_class, lv_i_Loop, "course_num")
      lv_s_TempSection  =  Trim(GetItemString(dw_extra_class, lv_i_Loop, "section_num"))

lv_s_MessageString=lv_s_MessageString + "     " + String(lv_i_TempCourse) + " " + lv_s_TempSec
tion + "~n"
   NEXT
   MessageBox("Information", lv_s_MessageString, Information!, OK!)
END IF

SetSort(dw_final_classes, "course_num A, section_num A")
Sort(dw_final_classes)

End of Script



DataWindow: dw_prof_extra
X = 0               Y = 13              Width = 2821        Height = 405
TabOrder = 40       DataObject = "d_assign_prof_long"       TitleBar = true
Title = "Prof w/Extra (main)"           HScrollBar = true   VScrollBar = true
Border = true       LiveScroll = true   BorderStyle = stylebox!


CommandButton: cb_clear
X = 572             Y = 1625            Width = 554         Height = 109
TabOrder = 90       Visible = true      Text = "Clear Existing Schedule"
```

```
//Local Variables
Integer     lv_i_RowCount
Integer     lv_i_Loop
//End Local Variables

SetPointer(Hourglass!)

SetRedraw(dw_final_classes, FALSE)

//Clear out final schedule datawindow
lv_i_RowCount  =  RowCount(dw_final_classes)

FOR lv_i_Loop = 1 to lv_i_RowCount
   DeleteRow(dw_final_classes, 1)
NEXT

//Clear out extra professor info datawindow
lv_i_RowCount  =  RowCount(dw_prof_extra)

FOR lv_i_Loop = 1 to lv_i_RowCount
   DeleteRow(dw_prof_extra, 1)
NEXT

//Clear out few professor info datawindow
lv_i_RowCount  =  RowCount(dw_prof_few)

FOR lv_i_Loop = 1 to lv_i_RowCount
   DeleteRow(dw_prof_few, 1)
NEXT

//Clear out done professor info datawindow
lv_i_RowCount  =  RowCount(dw_prof_okay)

FOR lv_i_Loop = 1 to lv_i_RowCount
   DeleteRow(dw_prof_okay, 1)
NEXT

//Clear out extra classes datawindow
lv_i_RowCount  =  RowCount(dw_extra_class)
```

```
Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95    Time: 20:37:42


FOR lv_i_Loop = 1 to lv_i_RowCount
   DeleteRow(dw_extra_class, 1)
NEXT

//Re-Retrieve data for class information
Retrieve(dw_class_info, s_parms.term, s_parms.department)
SetSort(dw_class_info, "course_num A, section_num A")
Sort(dw_class_info)

//Re-Retrieve data for professor information
Retrieve(dw_prof_info, s_parms.department)
SetSort(dw_prof_info, "calculated_priority A")
Sort(dw_prof_info)

cb_start.enabled  =  TRUE
cb_cancel.enabled =  TRUE
cb_clear.enabled  =  FALSE

SetRedraw(dw_final_classes, TRUE)

End of Script



DataWindow: dw_prof_info
X = 577              Y = 33               Width = 494          Height = 361
TabOrder = 30        DataObject = "d_prof_info_schedule"      TitleBar = true
Title = "Professor Information"           Border = true       LiveScroll = true
BorderStyle = stylebox!
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

DataWindow: dw_final_classes
X = 28 Y = 361 Width = 2766 Height = 1161
TabOrder = 70 Visible = true Enabled = true DataObject = "d_final_schedule"
VScrollBar = true Border = true LiveScroll = true BorderStyle = stylebox!

CommandButton: cb_cancel
X = 2090 Y = 1625 Width = 247 Height = 109
TabOrder = 80 Visible = true Text = "Cancel"

Script for: clicked event

```
//Close the window w_scheduling and does not save the changes made to the class schedule.

//Local Variables

//End Local Variables

close(w_scheduling)
```

End of Script

CommandButton: cb_ok
X = 2446 Y = 1625 Width = 247 Height = 109
TabOrder = 110 Visible = true Enabled = true Text = "&OK"

Script for: clicked event

```
//Close the window w_scheduling and saves the new class schedule.

//Local Variables

//End Local Variables
```

Window: w_scheduling
Library: e:\thesis\appl\schedule.pbl
Date: 5/1/95 Time: 20:37:42

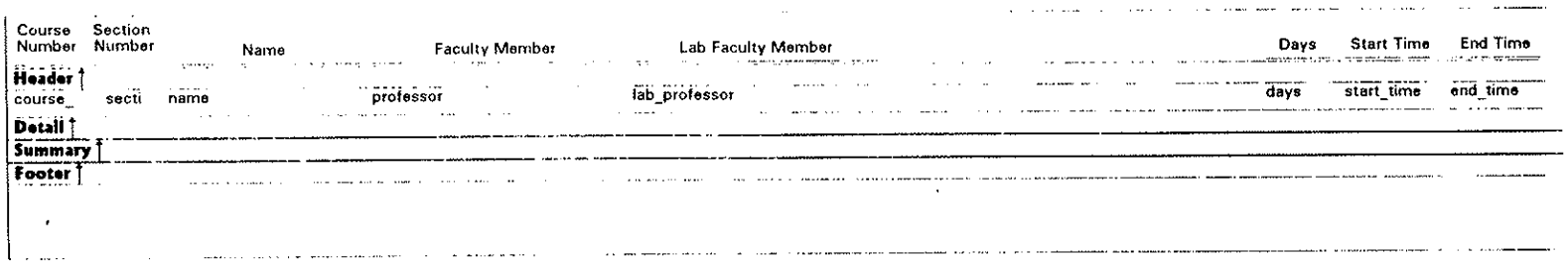
```
//Update database with new final class schedule, if one was made.
IF ((ModifiedCount(dw_final_classes) > 0) OR (DeletedCount(dw_final_classes) > 0)) THEN
   IF (Update(dw_final_classes) = 1) THEN
      COMMIT;
   ELSE
      ROLLBACK;
   END IF
END IF

//Close window
close(w_scheduling)
```

End of Script

DataWindow: d_final_schedule

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:37:51



ocation	ax Credit	in Credit	Building	oo	lass Limi	Flags	ab Day	ab Start Tim	Lab End Time	Lab Location	ab Max Credit	ab Min Credit	Lab Building	ab Roo
locat	max_credit	min_credit	building	room	class_limi	flags	lab_days	lab_start_ti	lab_end_tim	lab_l	lab_max_credit	lab_min_credit	lab_building	lab_ro

DataWindow: d_final_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:37:51

Retrieve: PBSELECT(TABLE(NAME="class_schedule") COLUMN(NAME="class_schedule.term") COLUMN(NAME="class_sc
Arguments: arg_s_term arg_s_department
Update Table: class_schedule
Filter: None
Sort: None
Sparse: None
Column: days
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 6
Column: start_time
    Updateable: Yes
    Key: No
    Format: "[time]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0

```
    Edit Style: Edit
    Edit limit: 0
Column: end_time
    Updateable:  Yes
    Key:  No
    Format: "[time]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: location
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 3
Column: max_credits
```

Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: min_credits
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: building
Updateable: Yes
Key: No
Format: "[general]"
Border style: None

Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 10
Column: room
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 4
Column: class_limit
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None

DataWindow: d_final_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:37:51

Edit limit: 0
Column: flags
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 10
Column: lab_days
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 6
Column: lab_start_time
Updateable: Yes

DataWindow: d_final_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:37:51

Format: "[time]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: lab_end_time
Updateable: Yes
Key: No
Format: "[time]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: lab_location
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None

Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 3
Column: lab_max_credits
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: lab_min_credits
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit

Column: lab_building
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 10
Column: lab_room
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 4
Column: course_num
Updateable: Yes
Key: Yes

DataWindow: d_final_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:37:51

Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: section_num
Updateable: Yes
Key: Yes
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 3

Column: name
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None

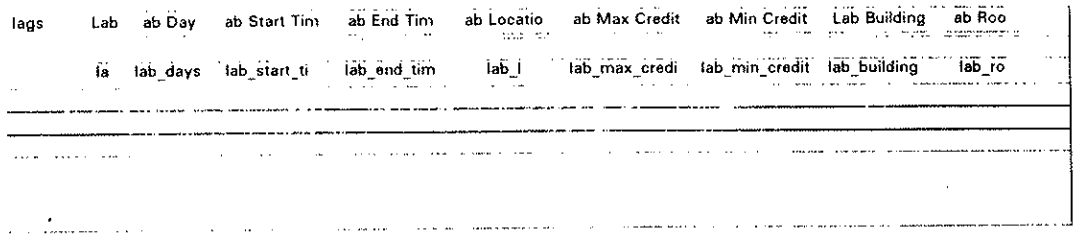
```
    Initial Value: None
    Edit Style: Edit
    Edit limit: 20
Column: lab_professor
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 35
Column: professor
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 35
```

DataWindow: d_class_into_schedule

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:49:41

	Term	epartmen	ourse Numbe	ection Numbe	Name	Days	Start Time	End Time	Location	ax Credit	in Credit	Building	oo	lass Limi	
Header	term	depar	course_num	secti	name	days	start_time	end_time	locat	max_credit	min_credit	building	room	class_limi	flag
Detail															
Summary															
Footer															


lags
Lab
ab Day
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lab_days
lab_start_ti
lab_end_tim
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lab_max_credi
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lab_building
lab_ro

DataWindow: d_class_info_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:49:41

Retrieve: PBSELECT(TABLE(NAME="class_information") COLUMN(NAME="class_information.term") COLUMN(NAME="cl
Arguments: arg_s_term arg_s_department
Update Table: class_information
Filter: None
Sort: None
Sparse: None
Column: term
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 10
Column: department
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0

```
    Edit Style: Edit
    Edit limit: 4
Column: course_num
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_num
    Updateable:  Yes
    Key:  Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 3
Column: name
```

```
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 20
Column: days
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 6
Column: start_time
    Updateable:  Yes
    Key:  No
    Format: "[time]"
    Border style: None
```

DataWindow: d_class_info_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:49:41

Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: end_time
Updateable: Yes
Key: No
Format: "[time]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: location
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None

```
    Edit limit: 3
Column: max_credits
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: min_credits
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: building
    Updateable:  Yes
```

DataWindow: d_class_info_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:49:41

Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 10
Column: room
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 4
Column: class_limit
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None

Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: flags
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 10
Column: lab
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit

Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:49:41

Column: lab_days
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 6
Column: lab_start_time
Updateable: Yes
Key: No
Format: "[time]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: lab_end_time
Updateable: Yes
Key: No

```
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: lab_location
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 3
Column: lab_max_credits
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
```

```
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: lab_min_credits
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: lab_building
    Updateable:  Yes
    Key:  No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 10
```

DataWindow: d_class_info_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:49:41

Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 4

DataWindow: d_prof_info_schedule

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:21:31

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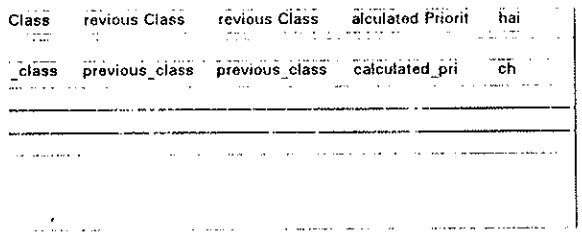
Header										
depar	name	ac	time_pref	emp_type	class_preferen	class_preferen	class_preferen	class_preferen	previous_class	previou
Detail										
Summary										
Footer										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ch

Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:21:31

```
Retrieve: PBSELECT(TABLE(NAME="professor_information" ) COLUMN(NAME="professor_information.department")
 COLUMN(NAME="professor_information.name") COLUMN(NAME="professor_information.active")
 COLUMN(NAME="professor_information.time_preference") COLUMN(NAME="professor_information.emp_type")
 COLUMN(NAME="professor_information.class_preference_1")
 COLUMN(NAME="professor_information.class_preference_2")
 COLUMN(NAME="professor_information.class_preference_3")
 COLUMN(NAME="professor_information.class_preference_4")
 COLUMN(NAME="professor_information.previous_class_1")
 COLUMN(NAME="professor_information.previous_class_2")
 COLUMN(NAME="professor_information.previous_class_3")
 COLUMN(NAME="professor_information.previous_class_4")
 COLUMN(NAME="professor_information.calculated_priority")
 COLUMN(NAME="professor_information.chair")WHERE( EXP1 ="~"professor_information~".~"department~"" OP
 ="=" EXP2 =":arg_s_department" ) ) ARG(NAME = "arg_s_department" TYPE = string)
Arguments: arg_s_department
Update Table: professor_information
Filter: None
Sort: None
Sparse: None
Column: department
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
```

Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 4
Column: active
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 1
Column: time_preference
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit

```
Column: class_preference_1
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: class_preference_2
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: class_preference_3
    Updateable: Yes
    Key: No
```

Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: class_preference_4
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: previous_class_1
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None

DataWindow: d_prof_info_schedule
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:21:31

Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: previous_class_2
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: previous_class_3
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: calculated_priority
Updateable: Yes
Key: No
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 0
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: chair
Updateable: Yes
Key: No
Format: "[general]"

```
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 1
Column: name
    Updateable: Yes
    Key: Yes
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
    Initial Value: None
    Edit Style: Edit
    Edit limit: 35
Column: emp_type
    Updateable: Yes
    Key: No
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 0
```

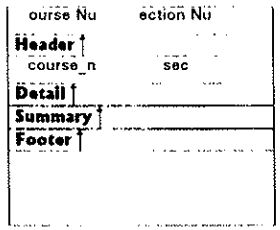
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:21:31

Edit Style: Edit
Edit limit: 10

DataWindow: d_extra_classes

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:41:56

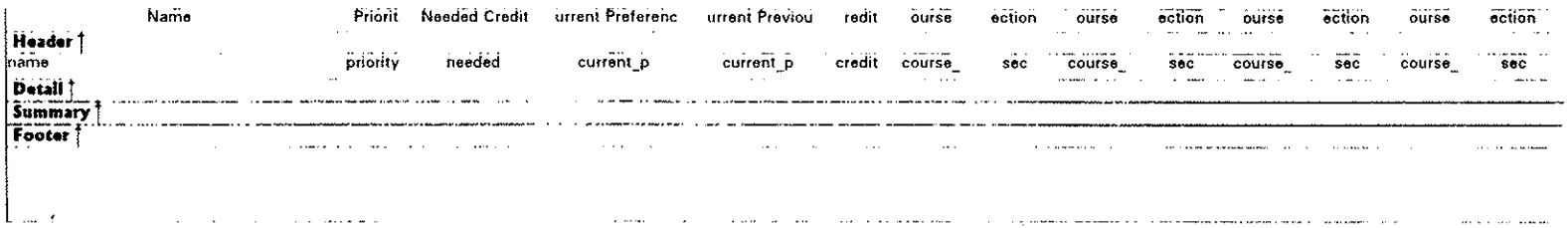


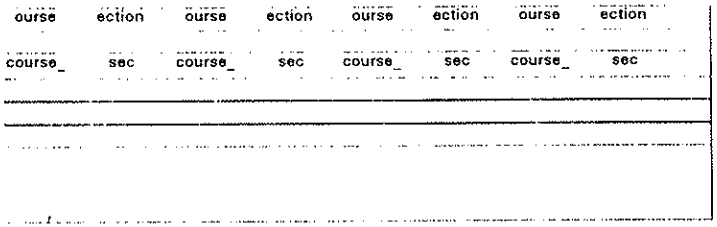
```
DataWindow: d_extra_classes
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95   Time: 17:41:56

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: course_num
     Format: "[general]"
     Border style: None
     Validation: None
     Validation Message: None
     Tab Sequence: 10
     Initial Value: None
     Edit Style: Edit
     Edit limit: 0
Column: section_num
     Format: "[general]"
     Border style: None
     Validation: None
     Validation Message: None
     Tab Sequence: 20
     Initial Value: None
     Edit Style: Edit
     Edit limit: 0
```

DataWindow: d_assign_prof_long

Library: e:\thesis\appl\schedule.pbl

Date: 5/2/95 Time: 17:57:47

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Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:57:47

Retrieve: Script
Arguments: None
Update Table: Not Allowed
Filter: None
Sort: None
Sparse: None
Column: name
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 10
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: priority
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: needed_credits

```
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: current_preference
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 20
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: current_previous
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 30
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
```

Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 40
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: course_1
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 50
Initial Value: None
Edit Style: Edit
Edit limit: 0

Column: section_1
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 60
Initial Value: None
Edit Style: Edit

DataWindow: d_assign_prot_long
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:57:47

Column: course_2
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 70
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_2
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 80
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: course_3
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 90
    Initial Value: None

DataWindow: d_assign_prof_long
Library: e:\thesis\appl\schedule.pbl
Date: 5/2/95 Time: 17:57:47

Edit limit: 0
Column: section_3
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 100
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: course_4
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 110
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: section_4
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 120

```
    Edit Style: Edit
    Edit limit: 0
Column: course_5
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 130
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_5
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 140
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: course_6
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
```

```
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_6
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 160
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: course_7
    Format: "[general]"
    Border style: None
    Validation: None
    Validation Message: None
    Tab Sequence: 170
    Initial Value: None
    Edit Style: Edit
    Edit limit: 0
Column: section_7
    Format: "[general]"
    Border style: None
    Validation: None
```

Tab Sequence: 180
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: course_8
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 190
Initial Value: None
Edit Style: Edit
Edit limit: 0
Column: section_8
Format: "[general]"
Border style: None
Validation: None
Validation Message: None
Tab Sequence: 200
Initial Value: None
Edit Style: Edit
Edit limit: 0

```
Function : add_ciass_lab

//Determines if the faculty member is available for a given class and lab(s).
//If the faculty member is available during those times the faculty member is
//assigned the course and the associated lab(s)

//Local Variables
Boolean     lv_b_AddClass = TRUE
Boolean     lv_b_AddLab1 = TRUE
Boolean     lv_b_AddLab2 = TRUE
Character   lv_ca_TempDay[7]
Integer     lv_i_Day1 = 1
Integer     lv_i_Day2 = 2
Integer     lv_i_Day3 = 4
Integer     lv_i_Day4 = 8
Integer     lv_i_Day5 = 16
Integer     lv_i_Day6 = 32
Integer     lv_i_ClassPeriod
Integer     lv_i_NumClassPeriods
Integer     lv_i_LabPeriod1
Integer     lv_i_NumLabPeriods1
Integer     lv_i_LabPeriod2
Integer     lv_i_NumLabPeriods2
Integer     lv_i_Loop
Integer     lv_i_Day
Integer     lv_i_BitsSet[6]
Integer     lv_i_ClassBits[6,6]
Integer     lv_i_Temp
Integer     lv_i_Count
Integer     lv_i_CurrentValue
//End Local Variables

lv_ca_TempDay  =  fv_s_ClassDays

IF (fv_t_classstart = Time(8,0,0)) THEN
   lv_i_ClassPeriod = 1
ELSEIF (fv_t_classstart = Time(9,40,0)) THEN
   lv_i_ClassPeriod = 2
ELSEIF (fv_t_classstart = Time(11,20,0)) THEN
   lv_i_ClassPeriod = 3
```

```
ELSEIF (fv_t_classstart = Time(14,40,0)) THEN
   lv_i_ClassPeriod = 5
END IF

lv_i_NumClassPeriods = num_periods(fv_t_classstart, fv_t_classend)

FOR lv_i_Count = 1 to lv_i_NumClassPeriods
   lv_i_BitsSet[1] = 0
   lv_i_BitsSet[2] = 0
   lv_i_BitsSet[3] = 0
   lv_i_BitsSet[4] = 0
   lv_i_BitsSet[5] = 0
   lv_i_BitsSet[6] = 0

   lv_i_Temp = fv_ia_pc[fv_i_prof, lv_i_ClassPeriod + lv_i_Count - 1]

   IF (lv_i_Temp - lv_i_Day6 >= 0) THEN
      lv_i_BitsSet[6] = lv_i_Day6
      lv_i_Temp = lv_i_Temp - lv_i_Day6
   END IF
   IF (lv_i_Temp - lv_i_Day5 >= 0) THEN
      lv_i_BitsSet[5] = lv_i_Day5
      lv_i_Temp = lv_i_Temp - lv_i_Day5
   END IF
   IF (lv_i_Temp - lv_i_Day4 >= 0) THEN
      lv_i_BitsSet[4] = lv_i_Day4
      lv_i_Temp = lv_i_Temp - lv_i_Day4
   END IF
   IF (lv_i_Temp - lv_i_Day3 >= 0) THEN
      lv_i_BitsSet[3] = lv_i_Day3
      lv_i_Temp = lv_i_Temp - lv_i_Day3
   END IF
   IF (lv_i_Temp - lv_i_Day2 >= 0) THEN
      lv_i_BitsSet[2] = lv_i_Day2
      lv_i_Temp = lv_i_Temp - lv_i_Day2
   END IF
   IF (lv_i_Temp -lv_i_Day1 >= 0) THEN
      lv_i_BitsSet[1] = lv_i_Day1
      lv_i_Temp = lv_i_Temp - lv_i_Day1
   END IF
```

```
   DO WHILE (lv_ca_TempDay[lv_i_Loop] <> char(0))
      lv_i_Day = Integer(lv_ca_TempDay[lv_i_Loop])

      lv_i_ClassBits[lv_i_Count, lv_i_Day] = 2^(lv_i_Day - 1)

      lv_i_Loop = lv_i_Loop + 1
   LOOP

   FOR lv_i_Loop = 1 to 6
      IF (lv_i_ClassBits[lv_i_Count, lv_i_Loop] > 0) THEN
         IF (lv_i_BitsSet[lv_i_Loop] > 0) THEN
            lv_b_AddClass = FALSE
         END IF
      END IF
   NEXT
NEXT

IF (lv_b_AddClass AND (fv_t_labstart1 <> Time(0, 0, 0))) THEN

   lv_ca_TempDay  =  fv_s_labdays1

   IF (fv_t_labstart1 = Time(8,0,0)) THEN
      lv_i_LabPeriod1 = 1
   ELSEIF (fv_t_labstart1 = Time(9,40,0)) THEN
      lv_i_LabPeriod1 = 2
   ELSEIF (fv_t_labstart1 = Time(11,20,0)) THEN
      lv_i_LabPeriod1 = 3
   ELSEIF (fv_t_labstart1 = Time(13,0,0)) THEN
      lv_i_LabPeriod1 = 4
   ELSEIF (fv_t_labstart1 = Time(14,40,0)) THEN
      lv_i_LabPeriod1 = 5
   END IF

   lv_i_NumLabPeriods1 = num_periods(fv_t_labstart1, fv_t_labend1)

   FOR lv_i_Count = 1 to lv_i_NumLabPeriods1
      lv_i_BitsSet[1] = 0
      lv_i_BitsSet[2] = 0
      lv_i_BitsSet[3] = 0
      lv_i_BitsSet[4] = 0
```

```
lv_i_Temp = fv_ia_pc[fv_i_prof, lv_i_LabPeriod1 + lv_i_Count - 1]

IF (lv_i_Temp - lv_i_Day6 >= 0) THEN
   lv_i_BitsSet[6] = lv_i_Day6
   lv_i_Temp = lv_i_Temp - lv_i_Day6
END IF
IF (lv_i_Temp - lv_i_Day5 >= 0) THEN
   lv_i_BitsSet[5] = lv_i_Day5
   lv_i_Temp = lv_i_Temp - lv_i_Day5
END IF
IF (lv_i_Temp - lv_i_Day4 >= 0) THEN
   lv_i_BitsSet[4] = lv_i_Day4
   lv_i_Temp = lv_i_Temp - lv_i_Day4
END IF
IF (lv_i_Temp - lv_i_Day3 >= 0) THEN
   lv_i_BitsSet[3] = lv_i_Day3
   lv_i_Temp = lv_i_Temp - lv_i_Day3
END IF
IF (lv_i_Temp - lv_i_Day2 >= 0) THEN
   lv_i_BitsSet[2] = lv_i_Day2
   lv_i_Temp = lv_i_Temp - lv_i_Day2
END IF
IF (lv_i_Temp -lv_i_Day1 >= 0) THEN
   lv_i_BitsSet[1] = lv_i_Day1
   lv_i_Temp = lv_i_Temp - lv_i_Day1
END IF

lv_i_Loop   =  1
DO WHILE (lv_ca_TempDay[lv_i_Loop] <> char(0))
   lv_i_Day = Integer(lv_ca_TempDay[lv_i_Loop])

   lv_i_ClassBits[lv_i_Count + lv_i_NumClassPeriods, lv_i_Day] = 2^(lv_i_Day - 1)

   lv_i_Loop = lv_i_Loop + 1
LOOP

FOR lv_i_Loop = 1 to 6
   IF (lv_i_ClassBits[lv_i_Count + lv_i_NumClassPeriods, lv_i_Loop] > 0) THEN
      IF (lv_i_BitsSet[lv_i_Loop] > 0) THEN
```

```
         END IF
      NEXT
   NEXT
END IF

IF (lv_b_AddClass AND lv_b_AddLab1 AND (fv_t_labstart2 <> Time(0, 0, 0))) THEN

   lv_ca_TempDay  =  fv_s_labdays2

   IF (fv_t_labstart2 = Time(8,0,0)) THEN
      lv_i_LabPeriod2 = 1
   ELSEIF (fv_t_labstart2 = Time(9,40,0)) THEN
      lv_i_LabPeriod2 = 2
   ELSEIF (fv_t_labstart2 = Time(11,20,0)) THEN
      lv_i_LabPeriod2 = 3
   ELSEIF (fv_t_labstart2 = Time(13,0,0)) THEN
      lv_i_LabPeriod2 = 4
   ELSEIF (fv_t_labstart2 = Time(14,40,0)) THEN
      lv_i_LabPeriod2 = 5
   END IF

   lv_i_NumLabPeriods2 = num_periods(fv_t_labstart2, fv_t_labend2)

   FOR lv_i_Count = 1 to lv_i_NumLabPeriods2
      lv_i_BitsSet[1] = 0
      lv_i_BitsSet[2] = 0
      lv_i_BitsSet[3] = 0
      lv_i_BitsSet[4] = 0
      lv_i_BitsSet[5] = 0
      lv_i_BitsSet[6] = 0

      lv_i_Temp = fv_ia_pc[fv_i_prof, lv_i_LabPeriod2 + lv_i_Count - 1]

      IF (lv_i_Temp - lv_i_Day6 >= 0) THEN
         lv_i_BitsSet[6] = lv_i_Day6
         lv_i_Temp = lv_i_Temp - lv_i_Day6
      END IF
      IF (lv_i_Temp - lv_i_Day5 >= 0) THEN
         lv_i_BitsSet[5] = lv_i_Day5
         lv_i_Temp = lv_i_Temp - lv_i_Day5
```

```
         lv_i_BitsSet[4] = lv_i_Day4
         lv_i_Temp = lv_i_Temp - lv_i_Day4
      END IF
      IF (lv_i_Temp - lv_i_Day3 >= 0) THEN
         lv_i_BitsSet[3] = lv_i_Day3
         lv_i_Temp = lv_i_Temp - lv_i_Day3
      END IF
      IF (lv_i_Temp - lv_i_Day2 >= 0) THEN
         lv_i_BitsSet[2] = lv_i_Day2
         lv_i_Temp = lv_i_Temp - lv_i_Day2
      END IF
      IF (lv_i_Temp -lv_i_Day1 >= 0) THEN
         lv_i_BitsSet[1] = lv_i_Day1
         lv_i_Temp = lv_i_Temp - lv_i_Day1
      END IF

      lv_i_Loop    =  1
      DO WHILE (lv_ca_TempDay[lv_i_Loop] <> char(0))
         lv_i_Day = Integer(lv_ca_TempDay[lv_i_Loop])

         lv_i_ClassBits[lv_i_Count + lv_i_NumClassPeriods + lv_i_NumLabPeriods1, lv_i_Day] = 2^(lv_i_Day

         lv_i_Loop = lv_i_Loop + 1
      LOOP

      FOR lv_i_Loop = 1 to 6
         IF (lv_i_ClassBits[lv_i_Count + lv_i_NumClassPeriods + lv_i_NumLabPeriods1, lv_i_Loop] > 0) THEN
            IF (lv_i_BitsSet[lv_i_Loop] > 0) THEN
               lv_b_AddLab2 = FALSE
            END IF
         END IF
      NEXT
   NEXT
END IF

IF (lv_b_AddClass AND lv_b_AddLab1 AND lv_b_AddLab2) THEN
   FOR lv_i_Count = 1 TO lv_i_NumClassPeriods
      lv_i_CurrentValue =  fv_ia_pc[fv_i_prof, lv_i_ClassPeriod + lv_i_Count - 1]
      FOR lv_i_Loop = 1 to 6
         lv_i_CurrentValue = lv_i_CurrentValue + lv_i_ClassBits[lv_i_Count, lv_i_Loop]
```

```
   NEXT

   IF (fv_t_labstart1 <> Time(0, 0, 0)) THEN
      FOR lv_i_Count = 1 TO lv_i_NumLabPeriods1
         lv_i_CurrentValue =  fv_ia_pc[fv_i_prof, lv_i_LabPeriod1 + lv_i_Count - 1]
         FOR lv_i_Loop = 1 to 6
            lv_i_CurrentValue = lv_i_CurrentValue + lv_i_ClassBits[lv_i_Count + lv_i_NumClassPeriods, lv_
         NEXT
         fv_ia_pc[fv_i_prof, lv_i_LabPeriod1 + lv_i_Count - 1] = lv_i_CurrentValue
      NEXT
   END IF

   IF (fv_t_labstart2 <> Time(0, 0, 0)) THEN
      FOR lv_i_Count = 1 TO lv_i_NumLabPeriods2
         lv_i_CurrentValue =  fv_ia_pc[fv_i_prof, lv_i_LabPeriod2 + lv_i_Count - 1]
         FOR lv_i_Loop = 1 to 6
            lv_i_CurrentValue = lv_i_CurrentValue + lv_i_ClassBits[lv_i_Count + lv_i_NumClassPeriods + lv
         NEXT
         fv_ia_pc[fv_i_prof, lv_i_LabPeriod2 + lv_i_Count - 1] = lv_i_CurrentValue
      NEXT
   END IF
END IF

Return (lv_b_AddClass AND lv_b_AddLab1 AND lv_b_AddLab2)
```

```
Function : delete_class_lab

//If a new faculty member is assigned a class that was originally assigned to
//a faculty member, then the class and labs must be deleted from the original
//faculty member.

//Local Variables
Character   lv_ca_TempDay[7]
Integer     lv_i_ClassPeriod
Integer     lv_i_NumClassPeriods
Integer     lv_i_LabPeriod1
Integer     lv_i_NumLabPeriods1
Integer     lv_i_LabPeriod2
Integer     lv_i_NumLabPeriods2
Integer     lv_i_Loop
Integer     lv_i_Day
Integer     lv_i_ClassBits[6]
Integer     lv_i_Count
Integer     lv_i_CurrentValue
//End Local Variables

lv_ca_TempDay  =  fv_s_ClassDays

IF (fv_t_classstart = Time(8,0,0)) THEN
   lv_i_ClassPeriod = 1
ELSEIF (fv_t_classstart = Time(9,40,0)) THEN
   lv_i_ClassPeriod = 2
ELSEIF (fv_t_classstart = Time(11,20,0)) THEN
   lv_i_ClassPeriod = 3
ELSEIF (fv_t_classstart = Time(13,0,0)) THEN
   lv_i_ClassPeriod = 4
ELSEIF (fv_t_classstart = Time(14,40,0)) THEN
   lv_i_ClassPeriod = 5
END IF

lv_i_NumClassPeriods = num_periods(fv_t_classstart, fv_t_classend)

FOR lv_i_Count = 1 to lv_i_NumClassPeriods
   lv_i_Loop   =  1
   DO WHILE (lv_ca_TempDay[lv_i_Loop] <> char(0))
```

```
      lv_i_ClassBits[lv_i_Day] = 2^(lv_i_Day - 1)

      lv_i_Loop = lv_i_Loop + 1
   LOOP

   lv_i_CurrentValue =  fv_ia_pc[fv_i_prof, lv_i_ClassPeriod + lv_i_Count - 1]
   FOR lv_i_Loop = 1 to 6
      lv_i_CurrentValue = lv_i_CurrentValue - lv_i_ClassBits[lv_i_Loop]
   NEXT
   fv_ia_pc[fv_i_prof, lv_i_ClassPeriod + lv_i_Count - 1] = lv_i_CurrentValue
NEXT

IF (fv_t_labstart1 <> Time(0, 0, 0)) THEN

   lv_ca_TempDay  =  fv_s_labdays1

   IF (fv_t_labstart1 = Time(8,0,0)) THEN
      lv_i_LabPeriod1 = 1
   ELSEIF (fv_t_labstart1 = Time(9,40,0)) THEN
      lv_i_LabPeriod1 = 2
   ELSEIF (fv_t_labstart1 = Time(11,20,0)) THEN
      lv_i_LabPeriod1 = 3
   ELSEIF (fv_t_labstart1 = Time(13,0,0)) THEN
      lv_i_LabPeriod1 = 4
   ELSEIF (fv_t_labstart1 = Time(14,40,0)) THEN
      lv_i_LabPeriod1 = 5
   END IF

   lv_i_NumLabPeriods1 = num_periods(fv_t_labstart1, fv_t_labend1)

   FOR lv_i_Count = 1 to lv_i_NumLabPeriods1
      lv_i_Loop   =  1
      DO WHILE (lv_ca_TempDay[lv_i_Loop] <> char(0))
         lv_i_Day = Integer(lv_ca_TempDay[lv_i_Loop])

         lv_i_ClassBits[lv_i_Day] = 2^(lv_i_Day - 1)

         lv_i_Loop = lv_i_Loop + 1
      LOOP
      lv_i_CurrentValue =  fv_ia_pc[fv_i_prof, lv_i_LabPeriod1 + lv_i_Count - 1]
```

```
      NEXT
      fv_ia_pc[fv_i_prof, lv_i_LabPeriod1 + lv_i_Count - 1] = lv_i_CurrentValue
   NEXT
END IF

IF (fv_t_labstart2 <> Time(0, 0, 0)) THEN
   lv_ca_TempDay  =  fv_s_labdays2

   lv_i_NumLabPeriods2 = num_periods(fv_t_labstart2, fv_t_labend2)

   FOR lv_i_Count = 1 to lv_i_NumLabPeriods2
      lv_i_Loop   =  1
      DO WHILE (lv_ca_TempDay[lv_i_Loop] <> char(0))
         lv_i_Day = Integer(lv_ca_TempDay[lv_i_Loop])

         lv_i_ClassBits[lv_i_Day] = 2^(lv_i_Day - 1)

         lv_i_Loop = lv_i_Loop + 1
      LOOP
      lv_i_CurrentValue =  fv_ia_pc[fv_i_prof, lv_i_LabPeriod2 + lv_i_Count - 1]
      FOR lv_i_Loop = 1 to 6
         lv_i_CurrentValue = lv_i_CurrentValue - lv_i_ClassBits[lv_i_Loop]
      NEXT
      fv_ia_pc[fv_i_prof, lv_i_LabPeriod2 + lv_i_Count - 1] = lv_i_CurrentValue
   NEXT
END IF

Return (TRUE)
```

```
Function : num_periods

//Determines the number of class periods that a class or lab covers.

//Local Variables
Integer     lv_i_NumPeriods
//End Local Variables

IF (start_time = Time(8,0,0)) THEN
   IF (end_time = Time(9,10,0)) THEN
      lv_i_NumPeriods = 1
   ELSEIF (end_time = Time(10,50,0)) THEN
      lv_i_NumPeriods = 2
   ELSEIF (end_time = Time(12,30,0)) THEN
      lv_i_NumPeriods = 3
   ELSEIF (end_time = Time(14,10,0)) THEN
      lv_i_NumPeriods = 4
   ELSEIF (end_time = Time(15,50,0)) THEN
      lv_i_NumPeriods = 5
   END IF
ELSEIF (start_time = Time(9,40,0)) THEN
   IF (end_time = Time(10,50,0)) THEN
      lv_i_NumPeriods = 1
   ELSEIF (end_time = Time(12,30,0)) THEN
      lv_i_NumPeriods = 2
   ELSEIF (end_time = Time(14,10,0)) THEN
      lv_i_NumPeriods = 3
   ELSEIF (end_time = Time(15,50,0)) THEN
      lv_i_NumPeriods = 4
   END IF
ELSEIF (start_time = Time(11,20,0)) THEN
   IF (end_time = Time(12,30,0)) THEN
      lv_i_NumPeriods = 1
   ELSEIF (end_time = Time(14,10,0)) THEN
      lv_i_NumPeriods = 2
   ELSEIF (end_time = Time(15,50,0)) THEN
      lv_i_NumPeriods = 3
   END IF
ELSEIF (start_time = Time(13,0,0)) THEN
   IF (end_time = Time(14,10,0)) THEN
```

```
      lv_i_NumPeriods = 2
   END IF
ELSEIF (start_time = Time(14,40,0)) THEN
   IF (end_time = Time(15,50,0)) THEN
      lv_i_NumPeriods = 1
   END IF
ELSE
   lv_i_NumPeriods = 0
END IF

Return(lv_i_NumPeriods)
```